

FCC SAR Test Report

APPLICANT : Motorola Mobility LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola
MODEL NAME : XT1980-3
FCC ID : IHDT56XS2
STANDARD : FCC 47 CFR Part 2 (2.1093)
ANSI/IEEE C95.1-1992
IEEE 1528-2013

The product was received on Mar. 08, 2019 and testing was started from Apr. 04, 2019 and completed on Apr. 10, 2019. We, Sporton International (Kunshan) Inc, would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.



Approved by: Mark Qu / Manager



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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA930808	Rev. 01	Initial issue of report	Apr. 23, 2019



1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility LLC, Mobile Cellular Phone, XT1980-3**, are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 5mm)	Body-worn (Separation 5mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.30	1.34	1.34	1.55
		GSM1900	0.11	1.36	1.36	
	WCDMA	Band V	0.15	1.12	1.12	
		Band IV	0.11	0.92	0.92	
		Band II	0.11	0.82	0.82	
	CDMA2000	BC10	0.20	1.13	0.95	
		BC0	0.20	1.19	1.05	
		BC1	0.12	1.18	1.26	
	LTE	Band 71	0.15	0.90	0.90	
		Band 12/Band 17	0.24	1.02	1.02	
		Band 13	0.20	1.10	1.10	
		Band 26/Band 5	0.24	1.11	1.11	
		Band 66/Band 4	0.19	0.78	0.78	
		Band 25/Band 2	0.16	1.11	1.11	
		Band 30	0.26	0.63	0.63	
		Band 7	0.21	1.03	0.84	
		Band 41/ Band 38	0.12	1.08	1.08	
DTS	WLAN	2.4GHz WLAN	0.73	0.58	0.58	1.46
NII		5GHz WLAN	1.13	1.03	1.04	1.55
DSS	Bluetooth	2.4GHz Bluetooth	<0.10	<0.10	<0.10	1.51

Highest 10g SAR Summary				
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)	Highest Simultaneous Transmission 10g SAR (W/kg)
Licensed	GSM	GSM850	2.94	3.98
		GSM1900	2.75	
	WCDMA	Band V	2.44	
		Band IV	1.85	
		Band II	2.34	
	CDMA2000	BC10	2.56	
		BC0	2.74	
		BC1	3.00	
	LTE	Band 12/Band 17	2.32	
		Band 13	1.67	
		Band 26/Band 5	1.54	
		Band 66/Band 4	1.82	
		Band 25/Band 2	2.55	
		Band 30	2.42	
		Band 7	2.04	
Band 41/ Band 38		2.35		
NII	WLAN	5GHz WLAN	1.73	3.98
Date of Testing:			2019/4/4 ~ 2019/4/10	
Remark: This device supports LTE B2 / B4 / B5 / B17 / B38 and B25 / B66 / B26 / B12 / B41. Since the supported frequency span for LTE B2 / B4 / B5 / B17 / B38 falls completely within the supports frequency span for LTE B25 / B66 / B26 / B12 / B41, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B25 / B66 / B26 / B12 / B41.				

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR, 4.0 W/kg for Product Specific 10g SAR) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.

2. Administration Data

Testing Laboratory	
Test Site	Sporton International (Kunshan) Inc.
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone, Jiangsu Province 215335, China TEL : 86-512-57900158 FAX : 86-512-57900958

Applicant	
Company Name	Motorola Mobility LLC
Address	222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

Manufacturer	
Company Name	Motorola Mobility LLC
Address	222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

3. Guidance Applied

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards:

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 616217 D04 SAR for laptop and tablets v01r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r02
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01

4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT1980-3
FCC ID	IHDT56XS2
IMEI Code	352156100022460
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz CDMA2000 BC0: 824.7 MHz ~ 848.31 MHz CDMA 2000 BC1: 1851.25 MHz ~ 1908.75 MHz CDMA 2000 BC10: 817.9 MHz ~ 823.1 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 30: 2307.5 MHz ~ 2312.5 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 MHz LTE Band 71: 665.5 MHz ~ 695.5 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+(16QAM uplink is not supported) CDMA2000 : 1xRTT/1xEv-Do(Rev.0)/1xEv-Do(Rev.A) LTE: QPSK, 16QAM, 64QAM WLAN 2.4GHz 802.11b/g/n HT20/n HT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC
HW Version	DVT 2
SW Version	PPF29.58
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Identical Prototype
Remark: 1. WLAN operation in 5600 MHz ~ 5650 MHz is notched. 2. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE	



- operation.
3. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
 4. This device 2.4GHz WLAN/5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only).
 5. This device does not support DTM operation and supports GRPS/EGRPS mode up to multi-slot class 12.
 6. When the phone is in talking mode and receiver worked, then power reduction will be implemented immediately at WLAN2.4/5.2/5.3/5.5/5.8GHz.
 7. The device employs proximity sensors that detect the presence of the user's body at the front or back faces of the device. When front or back body worn condition is detected, GSM850/1900, WCDMA B2 / B4 / B5, CDMA2000 BC0 / BC1 / BC10, LTE B2 / B4 / B5 / B7 / B12 / B13 / B17 / B25 / B26 / B30 / B38 / B41 / B66 and WLAN5.5/5.8GHz reduced power will be active. (P-sensor can't work at detecting presence of the user's body at the four edges of the device.)
 8. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of GSM850/1900, WCDMA B2 / B4 / B5, CDMA2000 BC0 / BC1 / BC10, LTE B2 / B4 / B5 / B7 / B12 / B13 / B17 / B25 / B26 / B30 / B38 / B41 / B66 and WLAN5.8GHz.
 9. This device hotspot reduced power and P-sensor reduced power level are the same for GSM850, WCDMA B5, CDMA2000 BC0 / BC10, LTE B5 / B7 / B12 / B13 / B17 / B26 / B30 / LTE B38 / LTE B41 and WLAN5.8GHz. And for other bands are different.
 10. For P-sensor reduced power level is higher than hotspot reduced power, so for front/back P-sensor SAR can represent conservatively for front/back hotspot SAR.
 11. P-sensor can detect handheld state, GSM1900, WCDMA B2 / B4, CDMA2000 BC1, LTE B2 / B4 / B7 / B25 / B30 / LTE B41 (power class 2) / B66 for front/back/bottom sides of product specific 10g SAR condition reduced powers will be active.
 12. This device has two WWAN transmitter antennas. WWAN antenna 1 is located at the right side of bottom edge of the device and WWAN antenna 2 is located at the left side of bottom edge of the device which can refer to antenna location chapter. WWAN antenna 1 frequency bands include GSM850/1900, WCDMA B2 / B4 / B5, CDMA2000 BC0 / BC1 / BC10, LTE B2 / B4 / B5 / B12 / B13 / B17 / B25 / B26 / B66 / B71, WWAN antenna 2 frequency bands include LTE B7 / B30 / B38 / B41.
 13. This device supports HPUE for LTE band 41 with class 2 level, so HPUE SAR has been performed.
 14. This device implements antenna tuning techniques for several WWAN (cellular) operating modes and frequencies for the purpose of improving antenna efficiency over a broad range of frequencies. Specifically, these techniques are employed in the GSM, WCDMA, CDMA and LTE modes of WWAN antenna 1. In this report SAR was measured according to the normally required SAR configurations with the tuner active and worst tune state (auto tune) was used for SAR testing.
 15. This is a variant report for XT1980-3, the product equality declaration could be referred to Appendix F. Based on the similarity between two models, we re-test WLAN5.5/5.8GHz since the reduced power level is different for receiver on ,P-Sensor and hotspot mode, and other bands verified the worse cases from reference report (Sporton Report Number FA8D2801) for difference.

4.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																																										
FCC ID		IHDT56XS2																																																																								
Equipment Name		Mobile Cellular Phone																																																																								
Operating Frequency Range of each LTE transmission band		LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 30: 2307.5 MHz ~ 2312.5 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 1710.7 MHz ~1779.3 MHz LTE Band 71: 665.5 MHz ~ 695.5 MHz																																																																								
Channel Bandwidth		LTE Band 2:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 4:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 5:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 13: 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 25:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 26:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 30: 5MHz, 10MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 66: 1.4MHz, 3MHz,5MHz, 10MHz, 15MHz, 20MHz LTE Band 71: 5MHz, 10MHz, 15MHz, 20MHz																																																																								
Uplink Modulations Used		QPSK, 16QAM and 64QAM																																																																								
LTE Voice / Data requirements		Voice and Data																																																																								
LTE Release Version		R12, Cat13																																																																								
CA Support		Yes, Uplink and Downlink																																																																								
LTE MPR permanently built-in by design		<table><tr><th colspan="8">Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</th></tr><tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th><th rowspan="2">MPR (dB)</th></tr><tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr><tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr><tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr><tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr><tr><td>64 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 2</td></tr><tr><td>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 3</td></tr><tr><td>256 QAM</td><td colspan="6">≥ 1</td><td>≤ 5</td></tr></table>			Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3								Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
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QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1																																																																			
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1																																																																			
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2																																																																			
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2																																																																			
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3																																																																			
256 QAM	≥ 1						≤ 5																																																																			
LTE A-MPR		In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)																																																																								
Spectrum plots for RB configuration		A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																																																								
Power reduction applied to satisfy SAR compliance		Yes 1. The device employs proximity sensors that detect the presence of the user's body at the front or back faces of the device. When front or back body worn condition is detected, LTE B2 / B4 / B5 / B7 / B12 / B13 / B17 / B25 / B26 / B30 / B38 / B41 / B66 reduced power will be active. (P-sensor can't work at detecting presence of the user's body at the four edges of the device.) 2. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of LTE B2 / B4 / B5 / B7 / B12 / B13 / B17 / B25 / B26 / B30 / B38 / B41/ B66. 3. P-sensor can detect handheld state, LTE B2 / B4 / B7 / B25 / B30 / LTE B41 (power class 2) / B66 for front/back/bottom sides of product specific 10g SAR condition reduced powers will be active.																																																																								
LTE Carrier Aggregation Combinations		Inter-Band and Intra-Band possible combinations and the detail power verification please referred to original report.																																																																								
LTE Carrier Aggregation Additional	(1) This device supports LTE Carrier Aggregation (CA) in the uplink for CA_5B and																																																																									

Information	CA_41C only for power class 3 with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per FCC Guidance. (2) This device supports maximum of 3 carriers in the downlink and 2 carriers in the uplink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.
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Transmission (H, M, L) channel numbers and frequencies in each LTE band														
LTE Band 2														
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz			
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860		
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880		
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900		
LTE Band 4														
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz			
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720		
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5		
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745		
LTE Band 5														
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz							
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	20407	824.7	20415	825.5	20425	826.5	20450	829						
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5						
H	20643	848.3	20635	847.5	20625	846.5	20600	844						
LTE Band 7														
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz							
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510						
M	21100	2535	21100	2535	21100	2535	21100	2535						
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560						
LTE Band 12														
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz							
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	23017	699.7	23025	700.5	23035	701.5	23060	704						
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5						
H	23173	715.3	23165	714.5	23155	713.5	23130	711						
LTE Band 13														
	Bandwidth 5 MHz				Bandwidth 10 MHz									
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)							
L	23205		779.5		23230		782							
M	23230		782											
H	23255		784.5											
LTE Band 17														
	Bandwidth 5 MHz				Bandwidth 10 MHz									
	Channel #		Freq.(MHz)		Channel #		Freq. (MHz)							
L	23755		706.5		23780		709							
M	23790		710		23790		710							
H	23825		713.5		23800		711							

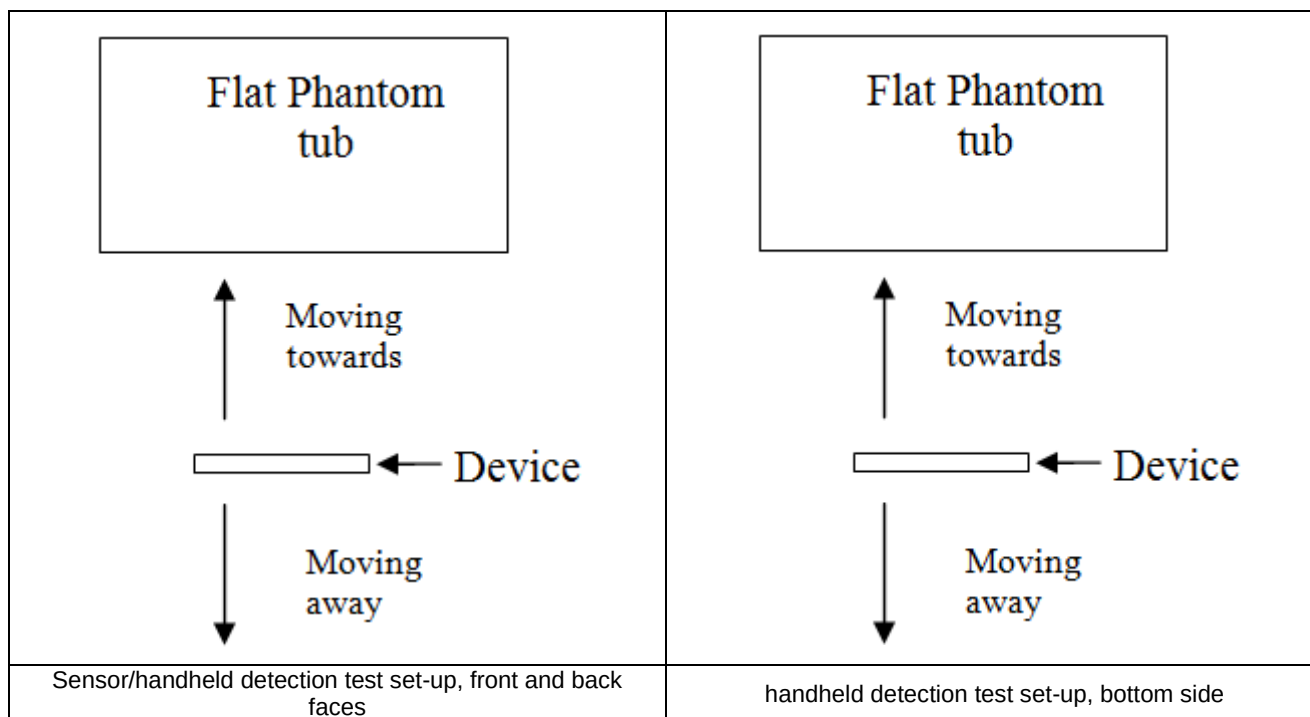


LTE Band 25												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905
LTE Band 26												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz			
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5		
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5		
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5		
LTE Band 30												
	Bandwidth 5 MHz					Bandwidth 10 MHz						
	Channel #		Freq.(MHz)			Channel #		Freq.(MHz)				
L	27685		2307.5			27710		2310				
M	27710		2310									
H	27735		2312.5									
LTE Band 38												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580				
M	38000	2595	38000	2595	38000	2595	38000	2595				
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610				
LTE Band 41												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506				
LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5				
M	40620	2593	40620	2593	40620	2593	40620	2593				
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5				
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680				
LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770
LTE Band 71												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	133147	665.5	133172	668	133197	670.5	133222	673				
M	133247	675.5	133272	678	133297	680.5	133322	683				
H	133447	695.5	133422	693	133397	690.5	133372	688				

5. Proximity Sensor Triggering Test

5.1 Proximity sensor triggering distances(Per KDB616217§6.2)

1. Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed and the tissue-equivalent medium for highest frequency (WLAN 5825MHz) and lowest (750MHz) frequency was used for proximity sensor triggering testing.
2. Capacitive proximity sensor placed coincident with antenna elements at the bottom end of the phone are utilized to determine when the device comes in proximity of the user's body at the front or back side surface of the device. There is no need to do sensor coverage testing for the proximity sensor is designed to support sufficient detection range and sensitivity to cover regions of the sensors in all applicable directions since the proximity sensor entirely covers the antenna.
3. When the sensor is active, GSM850/1900, WCDMA B2 / B4 / B5, CDMA2000 BC0 / BC1 / BC10, LTE B2 / B4 / B5 / B7 / B12 / B13 / B17 / B25 / B26 / B30 / B38 / B41 / B66 and WLAN5.5/5.8GHz reduced power will be active.
4. The sensors used to detect the proximity of the user's body at the front or back side surface of the device use a detection threshold distance. The data shown in the sections below shows the distance(s).
5. P-sensor can detect handheld state, GSM1900, WCDMA B2 / B4, CDMA2000 BC1, LTE B2 / B4 / B7 / B25 / B30 / LTE B41 (power class 2) / B66 for front/back/bottom sides of product specific 10g SAR condition reduced powers will be active.



<P-Sensor>

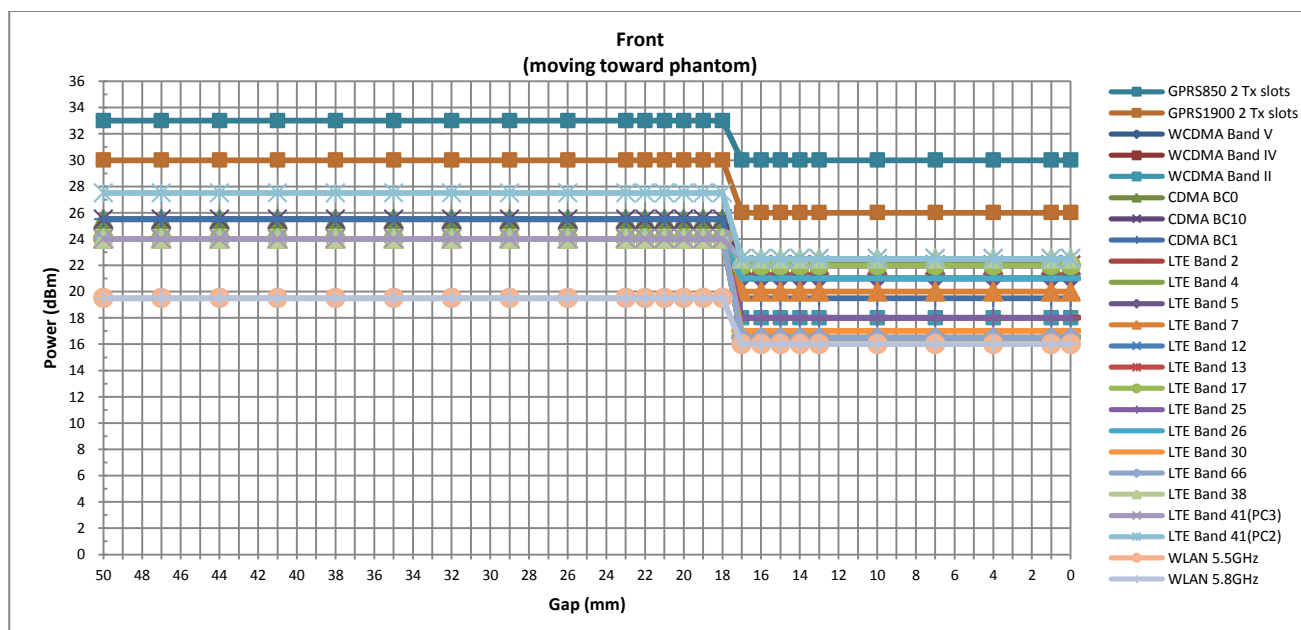
Proximity Sensor Triggering Distance (mm)				
Position	Front		Back	
	Moving towards	Moving away	Moving towards	Moving away
Minimum	17	20	20	25

TX. Band	Proximity Sensor Triggering Power (dBm)		
	Full	Reduced	power reduction (dB)
	max. tune up limit (dBm)	max. tune up limit(dBm)	
GSM850 GPRS 2Tx slots	33	30	3
GSM1900 GPRS 2Tx slots	30	26	4
WCDMA Band V	24	21	3
WCDMA Band IV	24	16.5	7.5
WCDMA Band II	24	18	6
CDMA BC0	25.5	22	3.5
CDMA BC10	25.5	22	3.5
CDMA BC1	25.5	19.5	6
LTE Band2	24	18	6
LTE Band4	24	16.5	7.5
LTE Band5	24	21	3
LTE Band7	24	20	4
LTE Band12	24	22	2
LTE Band13	24	22	2
LTE Band17	24	22	2
LTE Band25	24	18	6
LTE Band26	24	21	3
LTE Band30	24	17	7
LTE Band66	24	16.5	7.5
LTE Band38	24	22.5	1.5
LTE Band41 Power Class 3	24	22.5	1.5
LTE Band41 Power Class 2	27.5	22.5	5
WLAN 5.5GHz	19.5	16	3.5
WLAN 5.8GHz	19.5	16	3.5



Proximity Sensor Triggering Distance (mm) and Triggering Power (dBm)

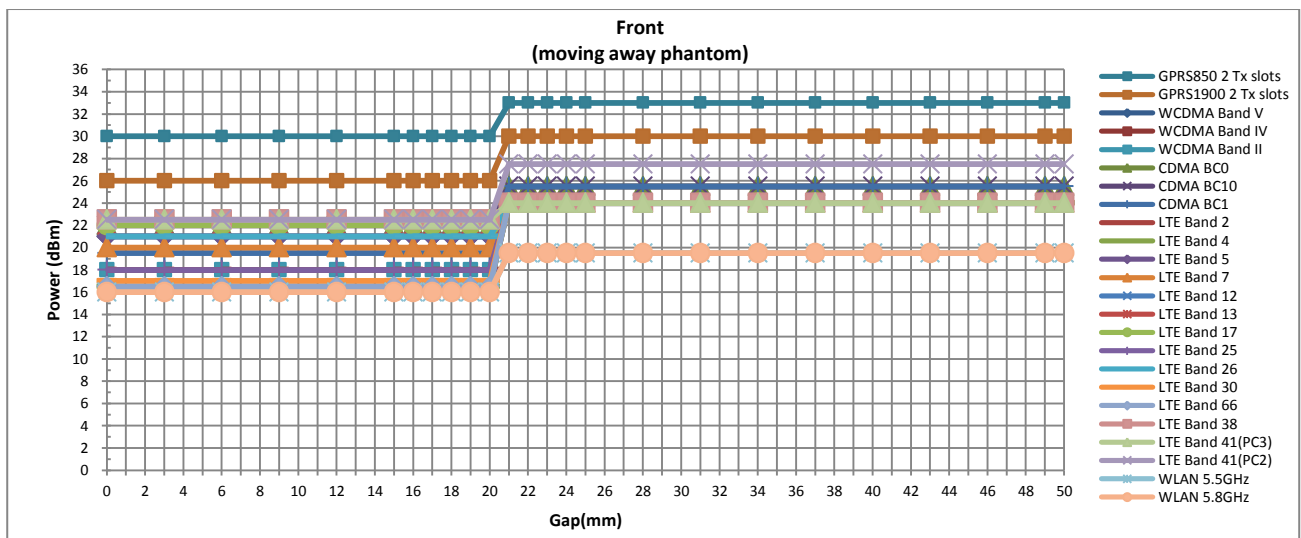
Front																									
Distance	50	47	44	41	38	35	32	29	26	23	20	19	18	17	16	15	14	13	12	11	10	7	4	1	0
GSM850 GPRS 2Tx slots	33	33	33	33	33	33	33	33	33	33	33	33	33	30	30	30	30	30	30	30	30	30	30	30	30
GSM1900 GPRS 2Tx slots	30	30	30	30	30	30	30	30	30	30	30	30	30	26	26	26	26	26	26	26	26	26	26	26	26
WCDMA Band V	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21	21
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	24	24	24	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18	18	18	18
CDMA BC0	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	22	22	22	22	22	22	22	22	22	22	22	22
CDMA BC10	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	22	22	22	22	22	22	22	22	22	22	22	22
CDMA BC1	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18	18	18	18
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
LTE Band5	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21	21
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	20	20	20	20	20	20	20	20	20	20	20	20
LTE Band12	24	24	24	24	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22	22	22	22	22	22
LTE Band13	24	24	24	24	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22	22	22	22	22	22
LTE Band17	24	24	24	24	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22	22	22	22	22	22
LTE Band25	24	24	24	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18	18	18	18
LTE Band26	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21	21
LTE Band30	24	24	24	24	24	24	24	24	24	24	24	24	24	17	17	17	17	17	17	17	17	17	17	17	17
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
LTE Band38	24	24	24	24	24	24	24	24	24	24	24	24	24	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
LTE Band41 Power Class 3	24	24	24	24	24	24	24	24	24	24	24	24	24	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
LTE Band41 Power Class 2	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
WLAN 5.5GHz	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	16	16	16	16	16	16	16	16	16	16	16	16
WLAN 5.8GHz	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	16	16	16	16	16	16	16	16	16	16	16	16





Proximity Sensor Triggering Distance (mm) and Triggering Power (dBm)

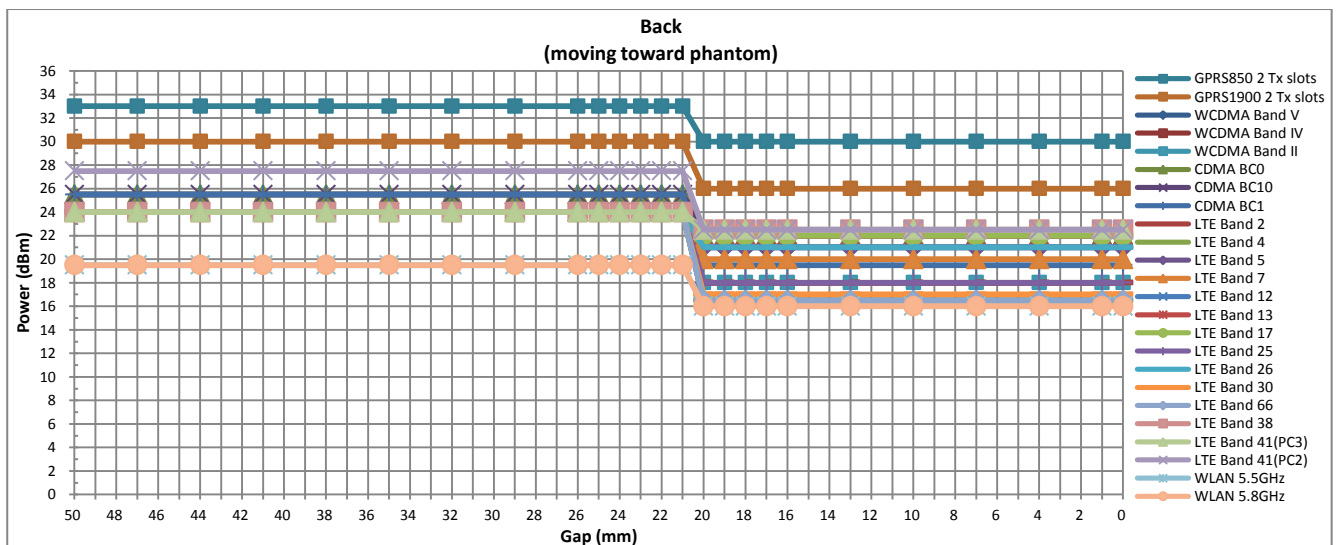
Front																									
Distance	50	47	44	41	38	35	32	29	26	23	20	19	18	17	16	15	14	13	12	11	10	7	4	1	0
GSM850 GPRS 2Tx slots	33	33	33	33	33	33	33	33	33	33	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
GSM1900 GPRS 2Tx slots	30	30	30	30	30	30	30	30	30	30	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
WCDMA Band V	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
CDMA BC0	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CDMA BC10	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CDMA BC1	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
LTE Band2	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
LTE Band4	24	24	24	24	24	24	24	24	24	24	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
LTE Band5	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
LTE Band7	24	24	24	24	24	24	24	24	24	24	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
LTE Band12	24	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
LTE Band13	24	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
LTE Band17	24	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
LTE Band25	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
LTE Band26	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
LTE Band30	24	24	24	24	24	24	24	24	24	24	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
LTE Band66	24	24	24	24	24	24	24	24	24	24	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
LTE Band38	24	24	24	24	24	24	24	24	24	24	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
LTE Band41 Power Class 3	24	24	24	24	24	24	24	24	24	24	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
LTE Band41 Power Class 2	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
WLAN 5.5GHz	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
WLAN 5.8GHz	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16





Proximity Sensor Triggering Distance (mm) and Triggering Power (dBm)

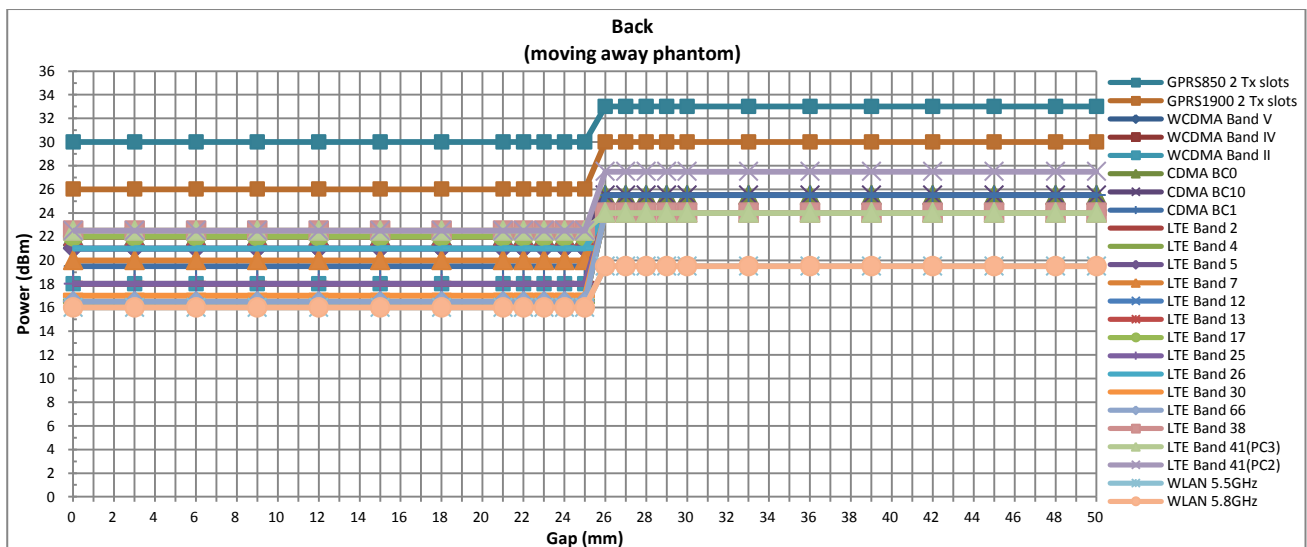
Back																									
Distance	50	47	44	41	38	35	32	29	26	23	20	19	18	17	16	15	14	13	12	11	10	7	4	1	0
GSM850 GPRS 2Tx slots	33	33	33	33	33	33	33	33	33	33	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
GSM1900 GPRS 2Tx slots	30	30	30	30	30	30	30	30	30	30	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
WCDMA Band V	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
CDMA BC0	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CDMA BC10	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CDMA BC1	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
LTE Band2	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
LTE Band4	24	24	24	24	24	24	24	24	24	24	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
LTE Band5	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
LTE Band7	24	24	24	24	24	24	24	24	24	24	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
LTE Band12	24	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
LTE Band13	24	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
LTE Band17	24	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
LTE Band25	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
LTE Band26	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
LTE Band30	24	24	24	24	24	24	24	24	24	24	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
LTE Band66	24	24	24	24	24	24	24	24	24	24	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
LTE Band38	24	24	24	24	24	24	24	24	24	24	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
LTE Band41 Power Class 3	24	24	24	24	24	24	24	24	24	24	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
LTE Band41 Power Class 2	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
WLAN 5.5GHz	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
WLAN 5.8GHz	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16





Proximity Sensor Triggering Distance (mm) and Triggering Power (dBm)

	Back																								
Distance	50	47	44	41	38	35	32	29	25	23	20	19	18	17	16	15	14	13	12	11	10	7	4	1	0
GSM850 GPRS 2Tx slots	33	33	33	33	33	33	33	33	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
GSM1900 GPRS 2Tx slots	30	30	30	30	30	30	30	30	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
WCDMA Band V	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
WCDMA Band IV	24	24	24	24	24	24	24	24	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
WCDMA Band II	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
CDMA BC0	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CDMA BC10	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CDMA BC1	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
LTE Band2	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
LTE Band4	24	24	24	24	24	24	24	24	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
LTE Band5	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
LTE Band7	24	24	24	24	24	24	24	24	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
LTE Band12	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
LTE Band13	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
LTE Band17	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
LTE Band25	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
LTE Band26	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
LTE Band30	24	24	24	24	24	24	24	24	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
LTE Band66	24	24	24	24	24	24	24	24	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
LTE Band38	24	24	24	24	24	24	24	24	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
LTE Band41 Power Class 3	24	24	24	24	24	24	24	24	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
LTE Band41 Power Class 2	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
WLAN 5.5GHz	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
WLAN 5.8GHz	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16



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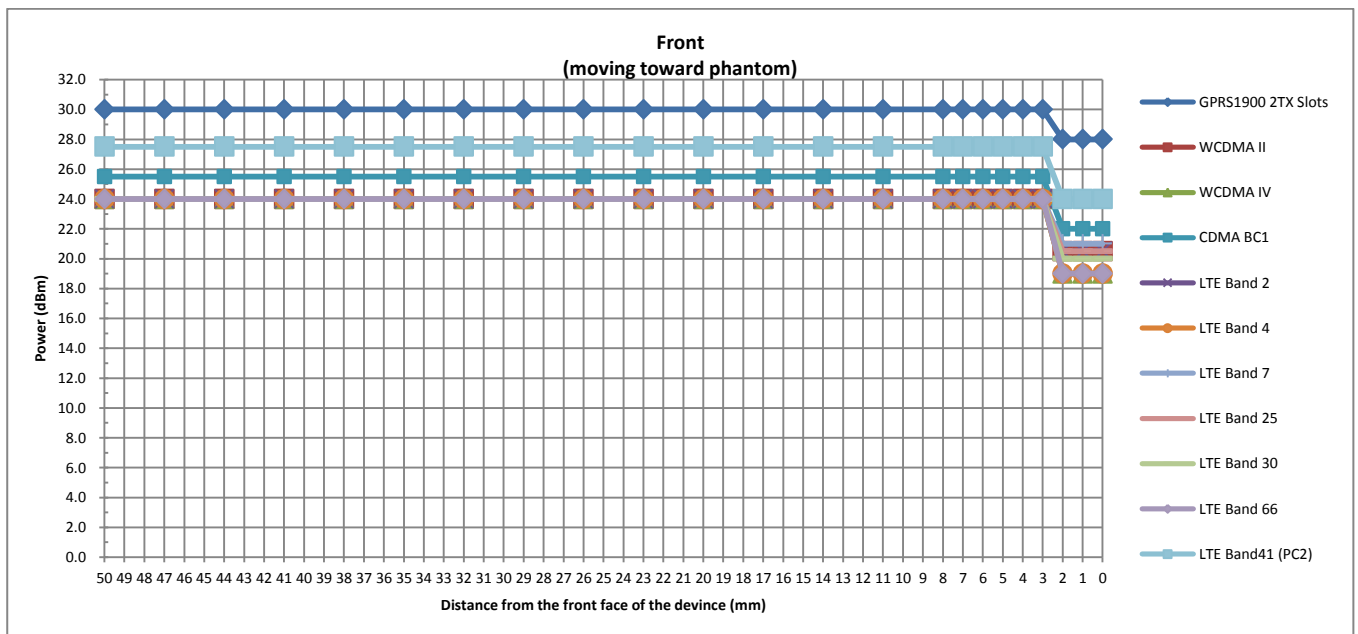
Handheld Triggering Distance (mm)						
Position	Front		Back		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	2	3	3	4	4	4

TX. Band	Handheld Triggering Power (dBm)		
	Full	Reduced	power reduction (dB)
	max. tune up limit (dBm)	max. tune up limit(dBm)	
GSM1900 GPRS 2Tx slots	30	28	2
WCDMA Band II	24	20.5	3.5
WCDMA Band IV	24	19	5
CDMA BC1	25.5	22	3.5
LTE Band2	24	20.5	3.5
LTE Band4	24	19	5
LTE Band7	24	21	3
LTE Band25	24	20.5	3.5
LTE Band30	24	20	4
LTE Band66	24	19	5
LTE Band41 Power Class 2	27.5	24	3.5



Handheld Triggering Distance (mm) and Triggering Power (dBm)

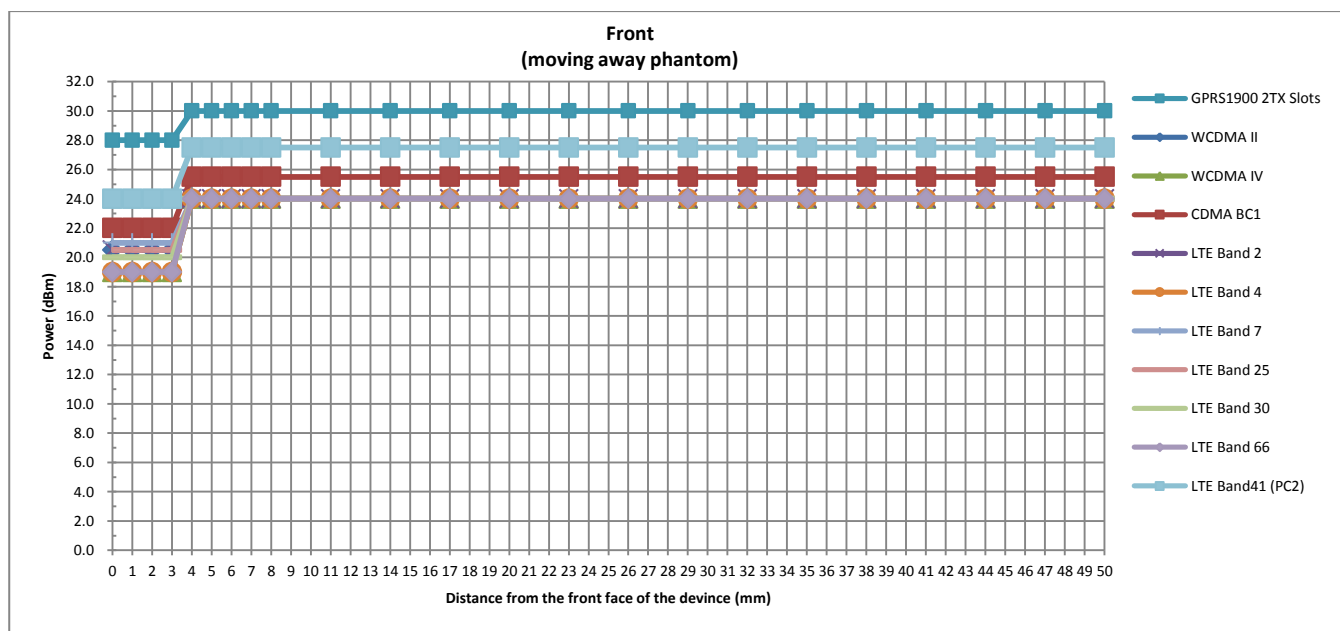
Front																										
Distance	50	47	44	41	38	35	32	29	26	23	20	19	18	17	16	15	14	13	12	11	10	7	4	3	2	0
GSM1900 GPRS 2Tx slots	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	28
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19
CDMA BC1	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	22	22
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21
LTE Band25	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5
LTE Band30	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20	20
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19
LTE Band41 Power Class 2	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	24	24



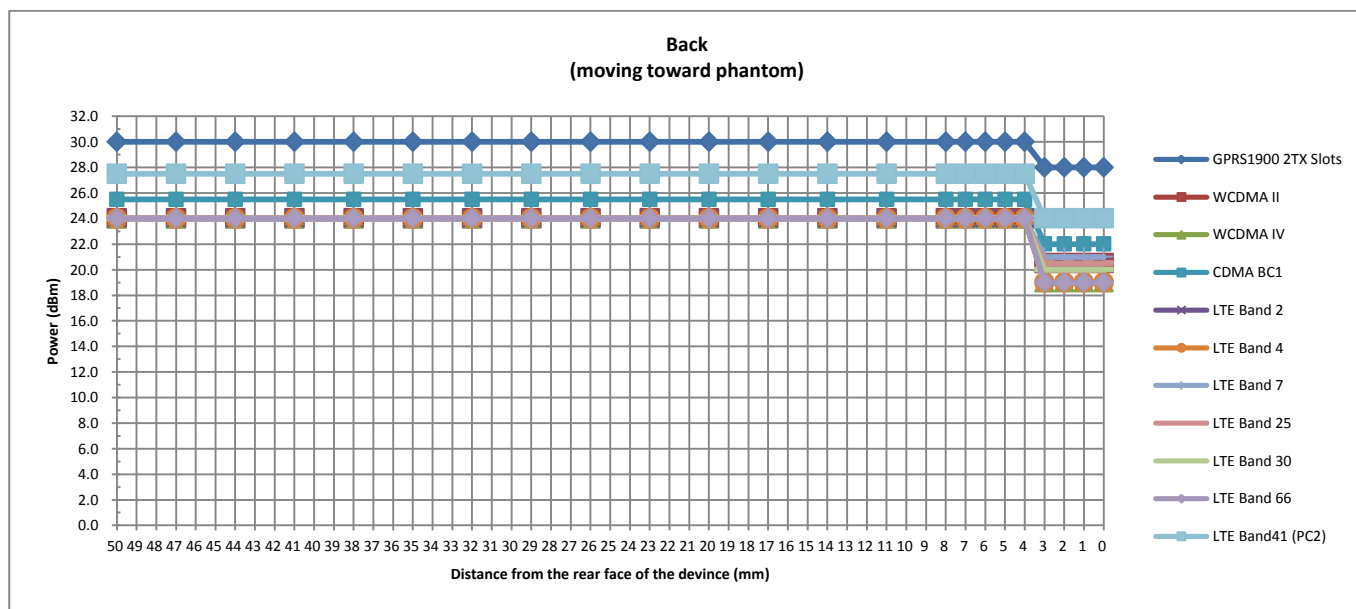


Handheld Triggering Distance (mm) and Triggering Power (dBm)

Front																										
Distance	50	47	44	41	38	35	32	29	26	23	20	19	18	17	16	15	14	13	12	11	10	7	4	3	2	0
GSM1900 GPRS 2Tx slots	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	28	28
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5	20.5
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19
CDMA BC1	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	22	22	22
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5	20.5
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21
LTE Band25	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5	20.5
LTE Band30	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20	20	20
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19
LTE Band41 Power Class 2	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	24	24	24

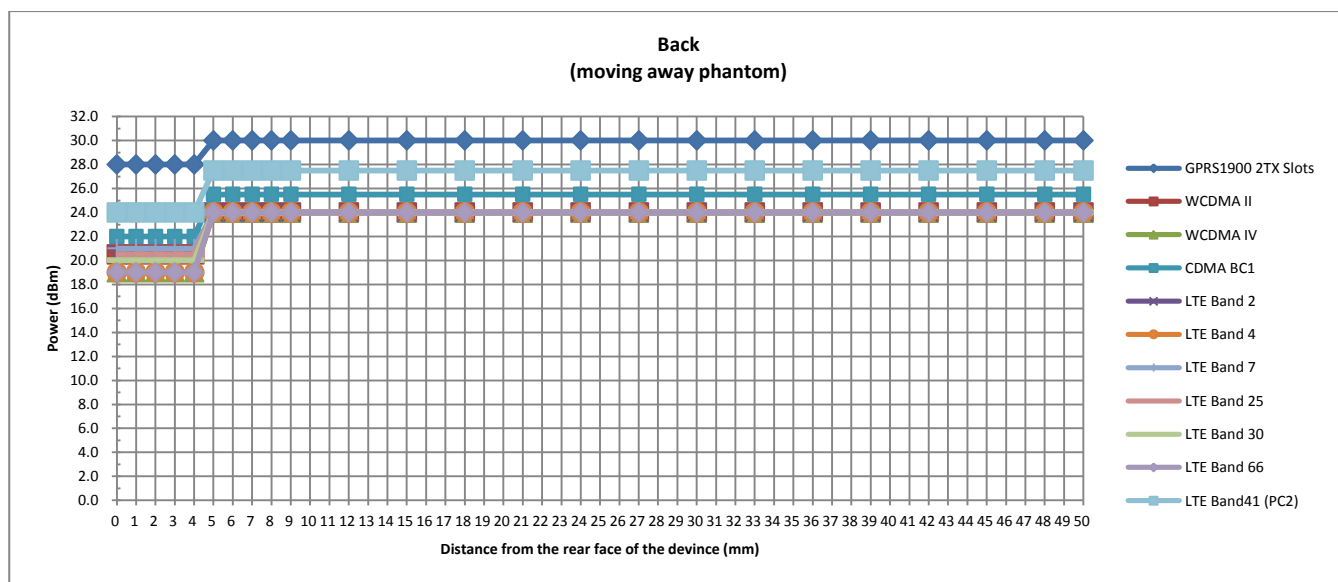


Handheld Triggering Distance (mm) and Triggering Power (dBm)																										
Back																										
Distance	50	47	44	41	38	35	32	29	26	23	20	19	18	17	16	15	14	13	12	11	10	7	4	3	2	0
GSM1900 GPRS 2Tx slots	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	28	28
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5	20.5
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19
CDMA BC1	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	22	22	22
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5	20.5
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21
LTE Band25	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5	20.5
LTE Band30	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20	20	20
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19
LTE Band41 Power Class 2	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	24	24	24



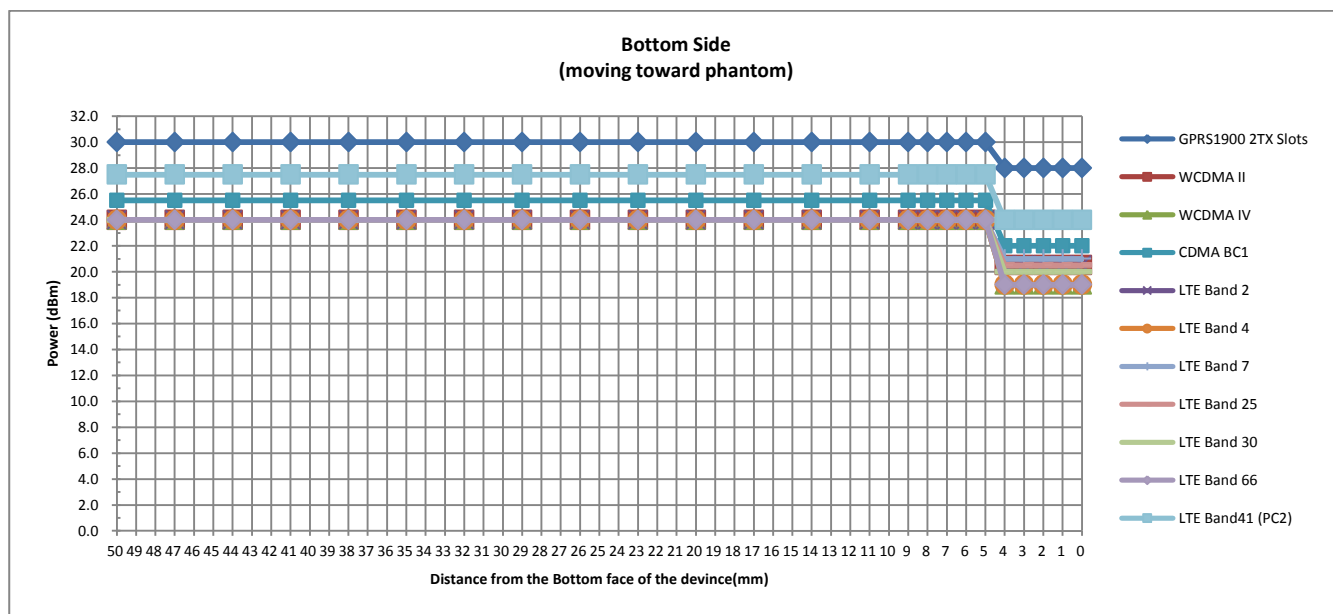


Handheld Triggering Distance (mm) and Triggering Power (dBm)																										
Back																										
Distance	50	47	44	41	38	35	32	29	26	23	20	19	18	17	16	15	14	13	12	11	10	7	4	3	2	0
GSM1900 GPRS 2Tx slots	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	28	28	28
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5	20.5	20.5
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19	19
CDMA BC1	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	22	22	22	22
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5	20.5	20.5
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19	19
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21
LTE Band25	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5	20.5	20.5
LTE Band30	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20	20	20	20
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19	19
LTE Band41 Power Class 2	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	24	24	24	24





Handheld Triggering Distance (mm) and Triggering Power (dBm)																										
Bottom Side																										
Distance	50	47	44	41	38	35	32	29	26	23	20	19	18	17	16	15	14	13	12	11	10	7	4	3	2	0
GSM1900 GPRS 2Tx slots	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	28	28	28
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5	20.5	20.5
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19	19
CDMA BC1	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	22	22	22	22
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5	20.5	20.5
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19	19
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21
LTE Band25	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5	20.5	20.5
LTE Band30	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20	20	20	20
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19	19
LTE Band41 Power Class 2	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	24	24	24	24

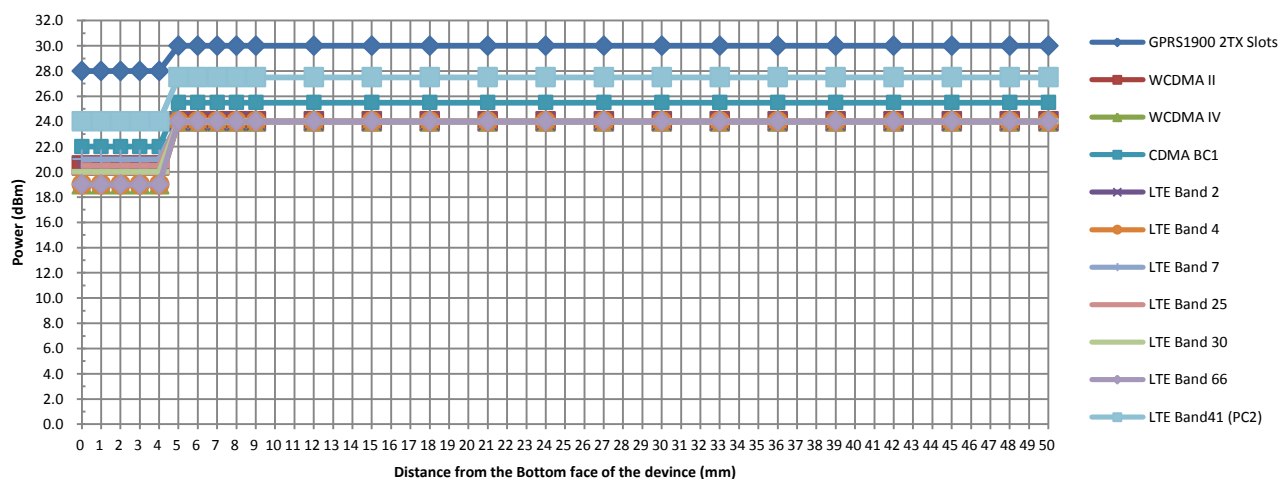




Handheld Triggering Distance (mm) and Triggering Power (dBm)

Bottom Side

Distance	50	47	44	41	38	35	32	29	26	23	20	19	18	17	16	15	14	13	12	11	10	7	4	3	2	0
GSM1900 GPRS 2Tx slots	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	28	28	28
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5	20.5	20.5
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19	19
CDMA BC1	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	22	22	22	22
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5	20.5	20.5
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19	19
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21
LTE Band25	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5	20.5	20.5
LTE Band30	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20	20	20	20
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19	19
LTE Band41 Power Class 2	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	24	24	24	24

Bottom Side
(moving away phantom)

6. RF Exposure Limits

6.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

6.2 Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. The exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

7. Specific Absorption Rate (SAR)

7.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

7.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$SAR = \frac{d}{dt} \left(\frac{dW}{dm} \right) = \frac{d}{dt} \left(\frac{dW}{\rho dv} \right)$$

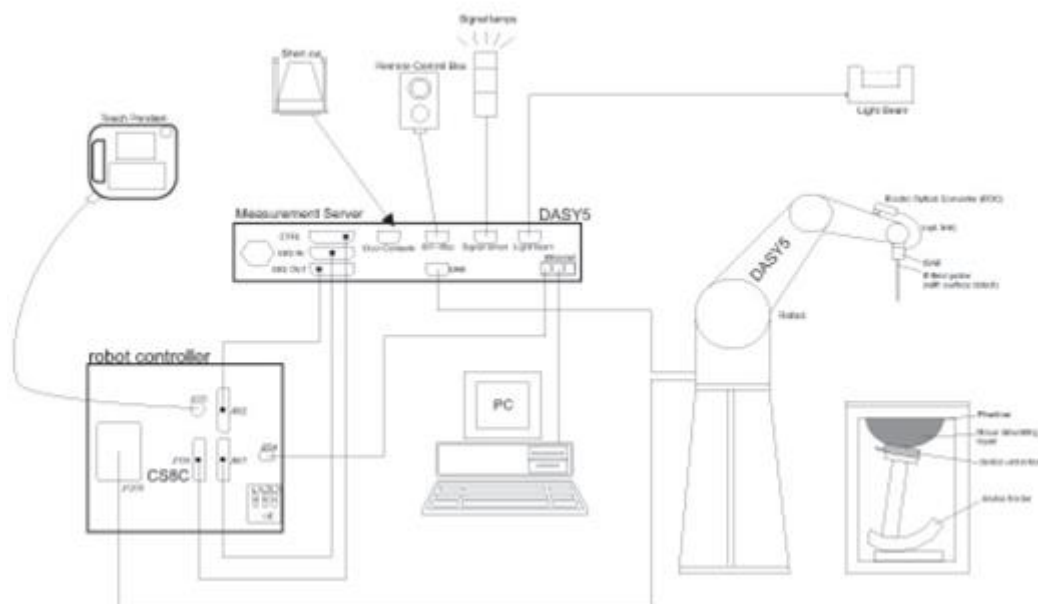
SAR is expressed in units of Watts per kilogram (W/kg)

$$SAR = \frac{\sigma |E|^2}{\rho}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

8. System Description and Setup

The DASY system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

8.1 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG). The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

<EX3DV4 Probe>

Construction	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – >6 GHz Linearity: ± 0.2 dB (30 MHz – 6 GHz)	
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)	
Dynamic Range	10 μ W/g – >100 mW/g Linearity: ± 0.2 dB (noise: typically <1 μ W/g)	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

8.2 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.



Photo of DAE

8.3 Phantom

<SAM Twin Phantom>

Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm	
Filling Volume	Approx. 25 liters	
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet	
Measurement Areas	Left Hand, Right Hand, Flat Phantom	

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

<ELI Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%)	
Filling Volume	Approx. 30 liters	
Dimensions	Major ellipse axis: 600 mm Minor axis: 400 mm	

The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

8.4 Device Holder

<Mounting Device for Hand-Held Transmitter>

In combination with the Twin SAM V5.0/V5.0c or ELI phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat). And upgrade kit to Mounting Device to enable easy mounting of wider devices like big smart-phones, e-books, small tablets, etc. It holds devices with width up to 140 mm.



Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

<Mounting Device for Laptops and other Body-Worn Transmitters>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.



Mounting Device for Laptops

9. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

- (a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
- (b) Read the WWAN RF power level from the base station simulator.
- (c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
- (d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

- (a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
- (b) Place the EUT in the positions as Appendix D demonstrates.
- (c) Set scan area, grid size and other setting on the DASY software.
- (d) Measure SAR results for the highest power channel on each testing position.
- (e) Find out the largest SAR result on these testing positions of each band
- (f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

- (a) Power reference measurement
- (b) Area scan
- (c) Zoom scan
- (d) Power drift measurement

9.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

- (a) Extraction of the measured data (grid and values) from the Zoom Scan
- (b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
- (c) Generation of a high-resolution mesh within the measured volume
- (d) Interpolation of all measured values form the measurement grid to the high-resolution grid
- (e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- (f) Calculation of the averaged SAR within masses of 1g and 10g

9.2 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

9.3 Area Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: Δx_{Area} , Δy_{Area}	≤ 2 GHz: ≤ 15 mm $2 - 3$ GHz: ≤ 12 mm	$3 - 4$ GHz: ≤ 12 mm $4 - 6$ GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

9.4 Zoom Scan

Zoom scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: $\Delta x_{\text{Zoom}}, \Delta y_{\text{Zoom}}$			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{\text{Zoom}}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{\text{Zoom}}(1)$: between 1 st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{\text{Zoom}}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{\text{Zoom}}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.				
* When zoom scan is required and the <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

9.5 Volume Scan Procedures

The volume scan is used to assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

9.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASYS measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.

10. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1087	2019/3/27	2020/3/26
SPEAG	835MHz System Validation Kit	D835V2	4d151	2019/3/27	2020/3/26
SPEAG	1750MHz System Validation Kit	D1750V2	1090	2019/3/27	2020/3/26
SPEAG	1900MHz System Validation Kit	D1900V2	5d170	2019/3/26	2020/3/25
SPEAG	2300MHz System Validation Kit	D2300V2	1055	2018/9/20	2019/9/19
SPEAG	2450MHz System Validation Kit	D2450V2	908	2019/3/25	2020/3/24
SPEAG	2600MHz System Validation Kit	D2600V2	1061	2018/12/7	2019/12/6
SPEAG	5000MHz System Validation Kit	D5GHzV2	1006	2018/9/27	2019/9/26
SPEAG	Data Acquisition Electronics	DAE4	1279	2018/10/22	2019/10/21
SPEAG	Data Acquisition Electronics	DAE4	1338	2018/12/3	2019/12/2
SPEAG	Dosimetric E-Field Probe	EX3DV4	3843	2018/9/27	2019/9/26
SPEAG	Dosimetric E-Field Probe	EX3DV4	3857	2018/5/31	2019/5/30
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1754	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1842	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201274349	2018/8/16	2019/8/15
Agilent	Wireless Communication Test Set	E5515C	MY52102706	2018/4/17	2019/4/16
Agilent	ENA Series Network Analyzer	E5071C	MY46111157	2018/4/17	2019/4/16
SPEAG	Dielectric Probe Kit	DAK-3.5	1138	2018/11/20	2019/11/19
Anritsu	Vector Signal Generator	MG3710A	6201682672	2019/1/14	2020/1/13
Rohde & Schwarz	Power Meter	NRVD	102081	2018/8/20	2019/8/19
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2018/8/20	2019/8/19
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2018/8/20	2019/8/19
R&S	CBT BLUETOOTH TESTER	CBT	101641	2019/1/14	2020/1/13
EXA	Spectrum Analyzer	FSV7	101631	2019/1/14	2020/1/13
Testo	Hygrometer	608-H1	1241332126	2018/8/21	2019/8/20
FLUKE	DIGITAC THERMOMETER	51II	97240029	2018/8/8	2019/8/7
ARRA	Power Divider	A3200-2	N/A	Note	
MCL	Attenuation1	BW-S10W5+	N/A	Note	
MCL	Attenuation2	BW-S10W5+	N/A	Note	
MCL	Attenuation3	BW-S10W5+	N/A	Note	
Agilent	Dual Directional Coupler	778D	20500	Note	
Agilent	Dual Directional Coupler	11691D	MY48151020	Note	
BONN	POWER AMPLIFIER	BLMA 0830-3	087193A	Note	
BONN	POWER AMPLIFIER	BLMA 2060-2	087193B	Note	

Note: Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check.

11. System Verification

11.1 Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 11.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 11.2.

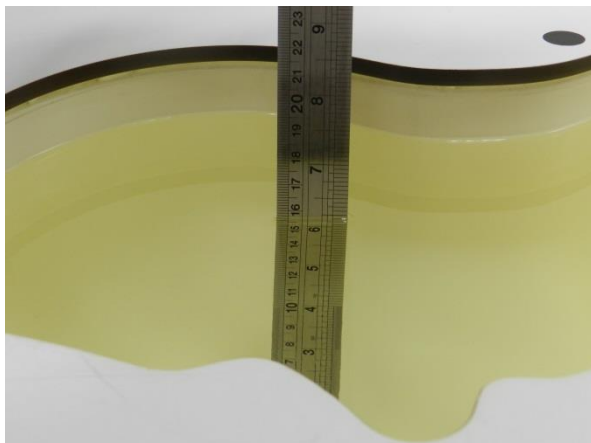


Fig 11.1 Photo of Liquid Height for Head SAR



Fig 11.2 Photo of Liquid Height for Body SAR

11.2 Tissue Verification

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (ϵ_r)
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0
For Body								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7
2600	68.1	0	0	0.1	0	31.8	2.16	52.5

Simulating Liquid for 5GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	64~78%
Mineral oil	11~18%
Emulsifiers	9~15%
Additives and Salt	2~3%

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target (σ)	Permittivity Target (ϵ_r)	Delta (σ) (%)	Delta (ϵ_r) (%)	Limit (%)	Date
750	Head	22.8	0.907	42.079	0.89	41.90	1.91	0.43	±5	2019/4/10
835	Head	22.9	0.906	41.176	0.90	41.50	0.67	-0.78	±5	2019/4/10
1750	Head	22.6	1.346	40.246	1.37	40.10	-1.75	0.36	±5	2019/4/9
1900	Head	22.6	1.402	39.391	1.40	40.00	0.14	-1.52	±5	2019/4/9
2300	Head	22.7	1.677	38.802	1.67	39.50	0.42	-1.77	±5	2019/4/9
2450	Head	22.7	1.882	38.380	1.80	39.20	4.56	-2.09	±5	2019/4/4
2600	Head	22.8	2.058	37.759	1.96	39.00	5.00	-3.18	±5	2019/4/9
5250	Head	22.6	4.879	37.308	4.71	35.90	3.59	3.92	±5	2019/4/6
5600	Head	22.6	5.249	36.763	5.07	35.50	3.53	3.56	±5	2019/4/6
5750	Head	22.6	5.413	36.556	5.22	35.40	3.70	3.27	±5	2019/4/6
750	Body	22.7	0.971	56.056	0.96	55.50	1.15	1.00	±5	2019/4/4
835	Body	22.9	0.990	56.003	0.97	55.20	2.06	1.45	±5	2019/4/4
1750	Body	22.6	1.455	51.577	1.49	53.40	-2.35	-3.41	±5	2019/4/4
1900	Body	22.9	1.534	53.033	1.52	53.30	0.92	-0.50	±5	2019/4/4
2300	Body	22.9	1.817	53.581	1.81	52.90	0.39	1.29	±5	2019/4/4
2450	Body	22.9	2.027	53.032	1.95	52.70	3.95	0.63	±5	2019/4/4
2600	Body	22.9	2.238	52.430	2.16	52.50	3.61	-0.13	±5	2019/4/4
5250	Body	22.6	5.489	47.919	5.36	48.90	2.41	-2.01	±5	2019/4/6
5600	Body	22.6	5.950	47.322	5.77	48.50	3.12	-2.43	±5	2019/4/6
5750	Body	22.6	6.159	47.076	5.94	48.30	3.69	-2.53	±5	2019/4/6

11.3 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

<1g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2019/4/10	750	Head	250	1087	3843	1338	2.18	8.36	8.72	4.31
2019/4/10	835	Head	250	4d151	3843	1338	2.24	9.30	8.96	-3.66
2019/4/9	1750	Head	250	1090	3843	1338	8.65	36.40	34.6	-4.95
2019/4/9	1900	Head	250	5d170	3843	1338	9.70	39.00	38.8	-0.51
2019/4/9	2300	Head	250	1055	3843	1338	12.40	48.70	49.6	1.85
2019/4/4	2450	Head	250	908	3857	1279	13.60	52.80	54.4	3.03
2019/4/9	2600	Head	250	1061	3843	1338	14.30	57.70	57.2	-0.87
2019/4/6	5250	Head	100	1006	3857	1279	7.54	80.70	75.4	-6.57
2019/4/6	5600	Head	100	1006	3857	1279	7.82	83.30	78.2	-6.12
2019/4/6	5750	Head	100	1006	3857	1279	7.64	80.40	76.4	-4.98
2019/4/4	750	Body	250	1087	3857	1279	2.24	8.58	8.96	4.43
2019/4/4	835	Body	250	4d151	3857	1279	2.48	9.53	9.92	4.09
2019/4/4	1750	Body	250	1090	3857	1279	8.94	37.70	35.76	-5.15
2019/4/4	1900	Body	250	5d170	3857	1279	9.94	40.00	39.76	-0.60
2019/4/4	2300	Body	250	1055	3857	1279	12.40	47.60	49.6	4.20
2019/4/4	2450	Body	250	908	3857	1279	12.50	50.80	50	-1.57
2019/4/4	2600	Body	250	1061	3857	1279	13.40	54.20	53.6	-1.11
2019/4/6	5250	Body	100	1006	3857	1279	7.51	78.30	75.1	-4.09
2019/4/6	5600	Body	100	1006	3857	1279	7.97	81.00	79.7	-1.60
2019/4/6	5750	Body	100	1006	3857	1279	7.41	77.40	74.1	-4.26

<10g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2019/4/4	750	Body	250	1087	3857	1279	1.47	5.75	5.88	2.26
2019/4/4	835	Body	250	4d151	3857	1279	1.57	6.20	6.28	1.29
2019/4/4	1750	Body	250	1090	3857	1279	4.74	19.90	18.96	-4.72
2019/4/4	1900	Body	250	5d170	3857	1279	5.11	21.00	20.44	-2.67
2019/4/4	2300	Body	250	1055	3857	1279	5.88	22.60	23.52	4.07
2019/4/4	2450	Body	250	908	3857	1279	5.75	23.60	23	-2.54
2019/4/4	2600	Body	250	1061	3857	1279	6.13	24.30	24.52	0.91
2019/4/6	5250	Body	100	1006	3857	1279	2.08	21.70	20.8	-4.15
2019/4/6	5600	Body	100	1006	3857	1279	2.18	22.50	21.8	-3.11

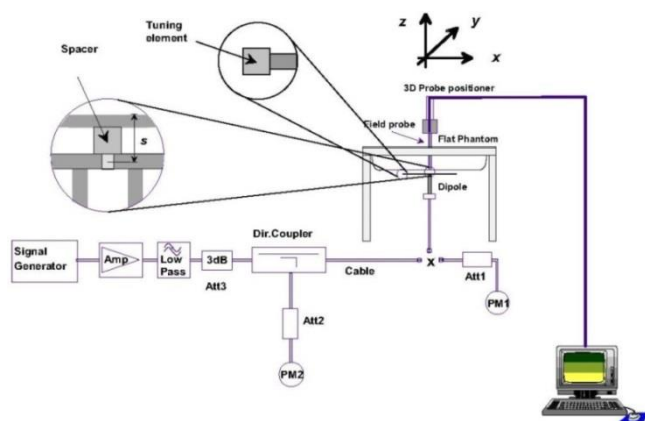


Fig 11.3.1 System Performance Check Setup



Fig 11.3.2 Setup Photo

12. RF Exposure Positions

12.1 Ear and handset reference point

Figure 12.1.1 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled "M," the left ear reference point (ERP) is marked "LE," and the right ERP is marked "RE." Each ERP is 15 mm along the B-M (back-mouth) line behind the entrance-to-ear-canal (EEC) point, as shown in Figure 12.1.2. The Reference Plane is defined as passing through the two ear reference points and point M. The line N-F (neck-front), also called the reference pivoting line, is normal to the Reference Plane and perpendicular to both a line passing through RE and LE and the B-M line (see Figure 12.1.3). Both N-F and B-M lines should be marked on the exterior of the phantom shell to facilitate handset positioning. Posterior to the N-F line the ear shape is a flat surface with 6 mm thickness at each ERP, and forward of the N-F line the ear is truncated, as illustrated in Figure 12.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

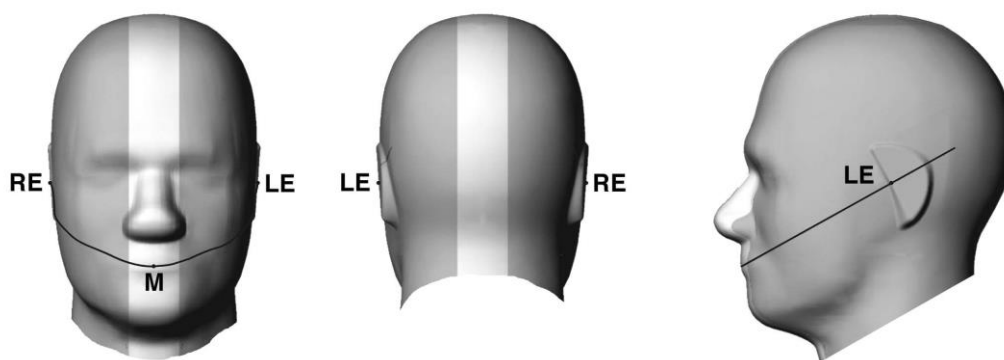


Fig 12.1.1 Front, back, and side views of SAM twin phantom

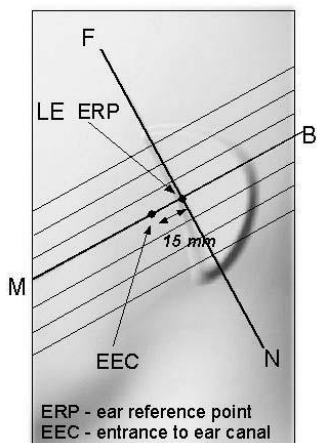


Fig 12.1.2 Close-up side view of phantom showing the ear region.

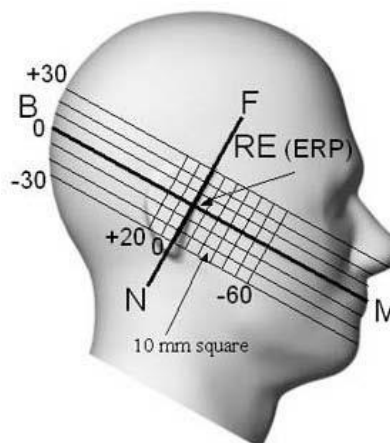


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

12.2 Definition of the cheek position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width w_t of the handset at the level of the acoustic output (point A in Figure 12.2.1 and Figure 12.2.2), and the midpoint of the width w_b of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 12.2.1). The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Figure 12.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 12.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 12.2.3. The actual rotation angles should be documented in the test report.

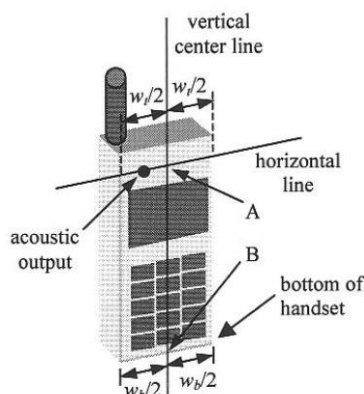


Fig 12.2.1 Handset vertical and horizontal reference lines—"fixed case"

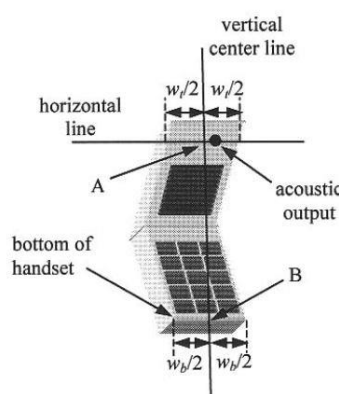


Fig 12.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

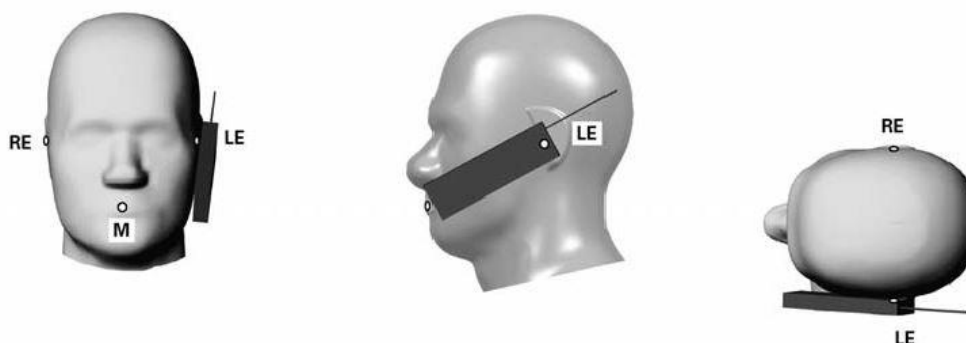


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

12.3 Definition of the tilt position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. While maintaining the orientation of the handset, move the handset away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15° .
3. Rotate the handset around the horizontal line by 15° .
4. While maintaining the orientation of the handset, move the handset towards the phantom on the line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact point is on the pinna. See Figure 12.3.1. If contact occurs at any location other than the pinna, e.g., the antenna at the back of the phantom head, the angle of the handset should be reduced. In this case, the tilt position is obtained if any point on the handset is in contact with the pinna and a second point

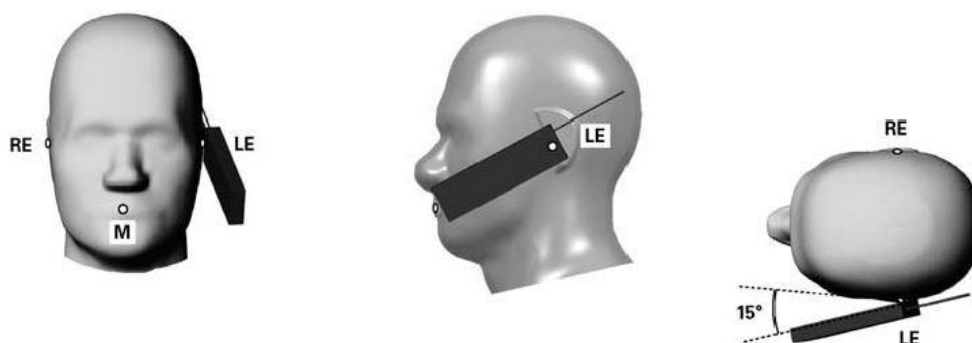


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

12.4 Body Worn Accessory

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 12.4). Per KDB648474 D04v01r03, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is $> 1.2 \text{ W/kg}$, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

Accessories for body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are test with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-chip used with different holsters) only the accessory that dictates the closest spacing to the body is tested.

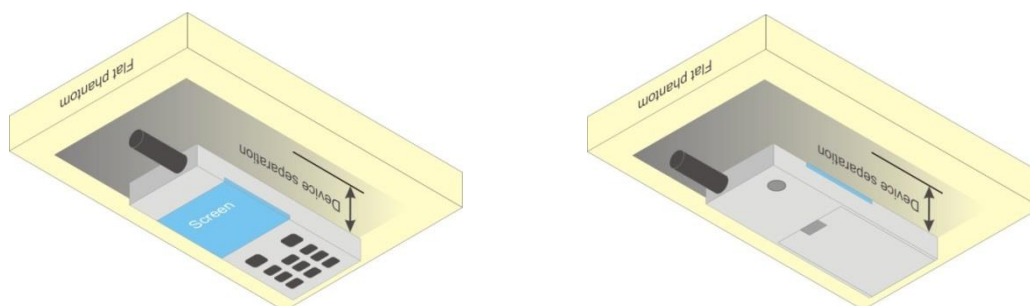


Fig 12.4 Body Worn Position

12.5 Product Specific 10g SAR Exposure

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, According to KDB648474 D04v01r03, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.
2. The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions.6 The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

12.6 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets ($L \times W \geq 9 \text{ cm} \times 5 \text{ cm}$) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v06 publication procedures. The "Portable Hotspot" feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

13. Conducted RF Output Power (Unit: dBm)

<WLAN Conducted Power>

General Note:

1. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
2. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
3. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
4. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.¹⁸ The initial test position procedure is described in the following:
 - a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
 - b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
 - c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

**<Reduced Power Mode for Receiver On>****<5GHz WLAN>**

5.5GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a 6Mbps	100	5500	13.95	14.50	98.28
		116	5580	14.22	14.50	
		132	5660	14.00	14.50	
		140	5700	13.16	14.50	
	802.11n-HT20 MCS0	100	5500	13.84	14.50	98.16
		116	5580	14.05	14.50	
		132	5660	13.80	14.50	
		140	5700	13.27	14.50	
	802.11n-HT40 MCS0	102	5510	14.09	14.50	96.32
		110	5550	13.69	14.50	
		134	5670	13.12	14.50	
	802.11ac-VHT20 MCS0	100	5500	13.93	14.50	98.16
		116	5580	14.09	14.50	
		132	5660	13.87	14.50	
		140	5700	13.25	14.50	
	802.11ac-VHT40 MCS0	102	5510	14.13	14.50	96.32
		110	5550	13.67	14.50	
		134	5670	13.08	14.50	
	802.11ac-VHT80 MCS0	106	5530	13.67	14.00	92.49



5.8GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a MCS0	149	5745	13.78	15.50	98.28
		157	5785	14.63	15.50	
		165	5825	14.31	15.50	
	802.11n-HT20 MCS0	149	5745	13.38	15.00	98.16
		157	5785	14.20	15.00	
		165	5825	13.98	15.00	
	802.11n-HT40 MCS0	151	5755	12.97	14.50	96.32
		159	5795	13.34	14.50	
	802.11ac-VHT20 MCS0	149	5745	13.23	15.00	98.16
		157	5785	14.19	15.00	
		165	5825	13.86	15.00	
	802.11ac-VHT40 MCS0	151	5755	12.64	14.50	96.32
		159	5795	12.98	14.50	
	802.11ac-VHT80 MCS0	155	5775	13.09	14.50	92.49

<Reduced Power Mode for P-Sensor On>

<5GHz WLAN>

5.5GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a 6Mbps	100	5500	14.80	16.00	98.28
		116	5580	15.00	16.00	
		132	5660	14.43	16.00	
		140	5700	14.09	16.00	
	802.11n-HT20 MCS0	100	5500	14.74	16.00	98.16
		116	5580	15.00	16.00	
		132	5660	14.82	16.00	
		140	5700	14.19	16.00	
	802.11n-HT40 MCS0	102	5510	15.08	16.00	96.32
		110	5550	14.60	16.00	
		134	5670	14.15	16.00	
	802.11ac-VHT20 MCS0	100	5500	14.92	16.00	98.16
		116	5580	15.17	16.00	
		132	5660	14.80	16.00	
		140	5700	14.49	16.00	
	802.11ac-VHT40 MCS0	102	5510	14.91	16.00	96.32
		110	5550	14.80	16.00	
		134	5670	14.37	16.00	
	802.11ac-VHT80 MCS0	106	5530	15.09	15.50	92.49

5.8GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a MCS0	149	5745	14.19	16.00	98.28
		157	5785	15.12	16.00	
		165	5825	14.68	16.00	
	802.11n-HT20 MCS0	149	5745	13.84	15.00	98.16
		157	5785	14.59	15.00	
		165	5825	14.16	15.00	
	802.11n-HT40 MCS0	151	5755	14.51	15.00	96.32
		159	5795	14.60	15.00	
	802.11ac-VHT20 MCS0	149	5745	13.64	15.00	98.16
		157	5785	14.39	15.00	
		165	5825	14.54	15.00	
	802.11ac-VHT40 MCS0	151	5755	14.56	15.00	96.32
		159	5795	14.68	15.00	
	802.11ac-VHT80 MCS0	155	5775	14.57	15.00	92.49

<Reduced Power Mode for Hotspot On>

5.8GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a MCS0	149	5745	14.19	16.00	98.28
		157	5785	15.12	16.00	
		165	5825	14.68	16.00	
	802.11n-HT20 MCS0	149	5745	13.84	15.00	98.16
		157	5785	14.59	15.00	
		165	5825	14.16	15.00	
	802.11n-HT40 MCS0	151	5755	14.51	15.00	96.32
		159	5795	14.60	15.00	
	802.11ac-VHT20 MCS0	149	5745	13.64	15.00	98.16
		157	5785	14.39	15.00	
		165	5825	14.54	15.00	
	802.11ac-VHT40 MCS0	151	5755	14.56	15.00	96.32
		159	5795	14.68	15.00	
	802.11ac-VHT80 MCS0	155	5775	14.57	15.00	92.49

14. SAR Test Results

14.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
01	GSM850	GPRS 2 Tx slots	Right Cheek	Full	128	824.2	32.03	33.00	1.250	-0.06	0.240	0.300
02	GSM1900	GPRS 2 Tx slots	Left Cheek	Full	661	1880	28.53	30.00	1.403	0.06	0.076	0.106

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
03	WCDMA Band V	RMC 12.2Kbps	Right Cheek	Full	4233	846.6	23.88	24.00	1.028	0.01	0.142	0.146
04	WCDMA Band IV	RMC 12.2Kbps	Left Cheek	Full	1413	1732.6	23.81	24.00	1.045	0.08	0.101	0.106
05	WCDMA Band II	RMC 12.2Kbps	Left Cheek	Full	9262	1852.4	23.90	24.00	1.023	0.02	0.105	0.107

<CDMA2000 SAR>

Plot No.	Band	Mode	Test Position	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
06	CDMA2000 BC10	RC3 SO55	Right Cheek	Full	684	823.1	25.18	25.50	1.076	0.08	0.182	0.196
07	CDMA2000 BC0	RC3 SO55	Right Cheek	Full	1013	824.7	25.07	25.50	1.104	0.02	0.180	0.199
08	CDMA2000 BC1	RC3 SO55	Left Cheek	Full	25	1851.25	24.99	25.50	1.125	0.01	0.105	0.118

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
09	LTE Band 71	20M	QPSK	1	0	Right Cheek	Full	133322	683	23.27	24.00	1.183	-0.06	0.124	0.147
10	LTE Band 12	10M	QPSK	1	0	Right Cheek	Full	23095	707.5	22.68	24.00	1.355	0.02	0.179	0.243
11	LTE Band 13	10M	QPSK	1	0	Right Cheek	Full	23230	782	22.85	24.00	1.303	0.05	0.152	0.198
12	LTE Band 26	15M	QPSK	1	0	Right Cheek	Full	26865	831.5	23.05	24.00	1.245	-0.08	0.191	0.238
13	LTE Band 66	20M	QPSK	1	0	Left Cheek	Full	132322	1745	22.79	24.00	1.321	0.04	0.143	0.189
14	LTE Band 25	20M	QPSK	1	0	Left Cheek	Full	26140	1860	23.01	24.00	1.256	0.14	0.128	0.161
15	LTE Band 30	10M	QPSK	1	0	Left Cheek	Full	27710	2310	22.70	24.00	1.349	0.07	0.193	0.260
16	LTE Band 7	20M	QPSK	1	0	Left Cheek	Full	21350	2560	22.82	24.00	1.312	0.06	0.159	0.209

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Power Mode	Power Class	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
17	LTE Band 41	20M	QPSK	1	0	Left Cheek	Full	2	41490	2680	26.52	27.50	1.253	42.9	1.009	0.11	0.098	0.124



<WLAN 2.4GHz SAR>

Plot No.	Band	Mode	Test Position	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
18	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	Receiver on	11	2462	17.98	19.00	1.265	100	1.000	0.04	0.578	0.731

<WLAN 5GHz SAR>

Plot No.	Band	Mode	Test Position	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Max Area Scan SAR	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
19	WLAN5.3GHz	802.11a 6Mbps	Left Cheek	Receiver on	64	5320	16.46	17.50	1.271	98.28	1.018	0.09		0.679	0.878
	WLAN5.5GHz	802.11n-HT40 MCS0	Right Cheek	Receiver on	102	5510	14.09	14.50	1.099	96.32	1.038		0.508		
	WLAN5.5GHz	802.11n-HT40 MCS0	Right Tilted	Receiver on	102	5510	14.09	14.50	1.099	96.32	1.038		0.486		
	WLAN5.5GHz	802.11n-HT40 MCS0	Left Cheek	Receiver on	102	5510	14.09	14.50	1.099	96.32	1.038	0.09	2.306	0.903	1.030
	WLAN5.5GHz	802.11n-HT40 MCS0	Left Tilted	Receiver on	102	5510	14.09	14.50	1.099	96.32	1.038	-0.02	1.469	0.587	0.670
20	WLAN5.5GHz	802.11n-HT40 MCS0	Left Cheek	Receiver on	110	5550	13.69	14.50	1.205	96.32	1.038	0.01		0.905	1.132
	WLAN5.5GHz	802.11n-HT40 MCS0	Left Cheek	Receiver on	134	5670	13.12	14.50	1.373	96.32	1.038	-0.01		0.618	0.881
	WLAN 5.8GHz	802.11a 6Mbps	Right Cheek	Receiver on	157	5785	14.63	15.50	1.222	98.28	1.018		0.306		
	WLAN 5.8GHz	802.11a 6Mbps	Right Tilted	Receiver on	157	5785	14.63	15.50	1.222	98.28	1.018		0.242		
	WLAN 5.8GHz	802.11a 6Mbps	Left Cheek	Receiver on	157	5785	14.63	15.50	1.222	98.28	1.018	0.05	1.780	0.746	0.928
	WLAN 5.8GHz	802.11a 6Mbps	Left Tilted	Receiver on	157	5785	14.63	15.50	1.222	98.28	1.018	0.02	0.919	0.287	0.357
21	WLAN 5.8GHz	802.11a 6Mbps	Left Cheek	Receiver on	149	5745	13.78	15.50	1.486	98.28	1.018	0.08		0.731	1.106
	WLAN 5.8GHz	802.11a 6Mbps	Left Cheek	Receiver on	165	5825	14.31	15.50	1.315	98.28	1.018	0.09		0.754	1.010

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
22	Bluetooth	1Mbps	Left Cheek	Full	78	2480	8.35	10.00	1.462	76.9	1.083	0.01	0.049	0.078

**14.2 Hotspot SAR****<GSM SAR>**

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
23	GSM850	GPRS 2 Tx slots	Back	5	Hotspot On	128	824.2	29.37	30.00	1.156	-0.04	1.160	1.341
24	GSM1900	GPRS 2 Tx slots	Back	5	Hotspot On	661	1880	25.19	26.00	1.205	-0.01	1.13	1.362

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
25	WCDMA Band V	RMC 12.2Kbps	Back	5	Hotspot On	4233	846.6	20.91	21.00	1.021	-0.06	1.100	1.123
26	WCDMA Band IV	RMC 12.2Kbps	Back	5	Hotspot On	1413	1732.6	16.46	16.50	1.009	0.08	0.913	0.921
27	WCDMA Band II	RMC 12.2Kbps	Back	5	Hotspot On	9400	1880	17.80	18.00	1.047	0.03	0.780	0.817

<CDMA2000 SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
28	CDMA2000 BC10	RTAP 153.6Kbps	Back	5	Hotspot On	684	823.1	21.65	22.00	1.084	-0.1	1.040	1.127
29	CDMA2000 BC0	RTAP 153.6Kbps	Back	5	Hotspot On	384	836.52	21.51	22.00	1.119	-0.02	1.060	1.187
30	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Side	5	Hotspot On	1175	1908.75	17.64	18.00	1.086	0.08	1.090	1.184

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
31	LTE Band 71	20M	QPSK	1	0	Back	5	Full	133322	683	23.27	24.00	1.183	-0.04	0.758	0.897
32	LTE Band 12	10M	QPSK	1	0	Back	5	Hotspot On	23095	707.5	21.10	22.00	1.230	-0.11	0.829	1.020
33	LTE Band 13	10M	QPSK	1	0	Back	5	Hotspot On	23230	782	21.23	22.00	1.194	-0.02	0.919	1.097
34	LTE Band 26	15M	QPSK	75	0	Back	5	Hotspot On	26865	831.5	20.31	21.00	1.172	0.06	0.945	1.108
35	LTE Band 66	20M	QPSK	50	24	Back	5	Hotspot On	132072	1720	16.20	16.50	1.072	0.08	0.723	0.775
36	LTE Band 25	20M	QPSK	50	0	Back	5	Hotspot On	26340	1880	17.70	18.00	1.072	-0.04	1.040	1.114
37	LTE Band 30	10M	QPSK	1	0	Back	5	Hotspot On	27710	2310	16.39	17.00	1.151	-0.06	0.544	0.626
38	LTE Band 7	20M	QPSK	100	0	Back	5	Hotspot On	21350	2560	19.61	20.00	1.094	0.14	0.942	1.031

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Mode	Power Class	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
39	LTE Band 41	20M	QPSK	1	0	Back	5	Hotspot On	3	40185	2549.5	22.04	22.50	1.112	62.9	1.006	-0.1	0.963	1.077

<WLAN 2.4GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
40	WLAN2.4GHz	802.11b 1Mbps	Back	5	Full	6	2437	19.91	20.00	1.021	100	1.000	0.03	0.568	0.580

<WLAN 5GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Max Area Scan SAR	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
41	WLAN5.2GHz	802.11a 6Mbps	Back	5	Full	36	5180	18.67	20.00	1.358	98.28	1.018	0		0.747	1.033
	WLAN 5.8GHz	802.11a 6Mbps	Front	5	Hotspot On	157	5785	15.12	16.00	1.225	98.28	1.018	-0.02	0.986	0.341	0.425
	WLAN 5.8GHz	802.11a 6Mbps	Back	5	Hotspot On	157	5785	15.12	16.00	1.225	98.28	1.018	0.01	1.533	0.590	0.736
	WLAN 5.8GHz	802.11a 6Mbps	Right Side	5	Hotspot On	157	5785	15.12	16.00	1.225	98.28	1.018		0.240		
	WLAN 5.8GHz	802.11a 6Mbps	Top Side	5	Hotspot On	157	5785	15.12	16.00	1.225	98.28	1.018		0.171		
42	WLAN 5.8GHz	802.11a 6Mbps	Back	5	Hotspot On	149	5745	14.19	16.00	1.517	98.28	1.018	0.18		0.537	0.829
	WLAN 5.8GHz	802.11a 6Mbps	Back	5	Hotspot On	165	5825	14.68	16.00	1.355	98.28	1.018	0.01		0.563	0.777

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
43	Bluetooth	1Mbps	Back	5	Full	78	2480	8.35	10.00	1.462	76.9	1.083	0.09	0.022	0.035

**14.3 Body Worn Accessory SAR****<GSM SAR>**

Plot No.	Band	Mode	Test Position	Gap (mm)	Headset	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
44	GSM850	GPRS 2 Tx slots	Back	5	-	P-Sensor On	128	824.2	29.37	30.00	1.156	-0.04	1.160	1.341
45	GSM1900	GPRS 2 Tx slots	Back	5	-	P-Sensor On	661	1880	25.19	26.00	1.205	-0.01	1.13	1.362

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Headset	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
46	WCDMA Band V	RMC 12.2Kbps	Back	5	-	P-Sensor On	4233	846.6	20.91	21.00	1.021	-0.06	1.100	1.123
47	WCDMA Band IV	RMC 12.2Kbps	Back	5	-	P-Sensor On	1413	1732.6	16.46	16.50	1.009	0.08	0.913	0.921
48	WCDMA Band II	RMC 12.2Kbps	Back	5	-	P-Sensor On	9400	1880	17.80	18.00	1.047	0.03	0.780	0.817

<CDMA2000 SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Headset	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
49	CDMA2000 BC10	RC3 SO32 (F+SCH)	Back	5	-	P-Sensor On	684	823.1	21.72	22.00	1.067	0.01	0.889	0.948
50	CDMA2000 BC0	RC3 SO32 (F+SCH)	Back	5	-	P-Sensor On	384	836.52	21.56	22.00	1.107	-0.07	0.944	1.045
51	CDMA2000 BC1	RC3 SO32 (F+SCH)	Back	5	-	P-Sensor On	25	1851.25	19.23	19.50	1.064	-0.03	1.180	1.256

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Headset	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
52	LTE Band 71	20M	QPSK	1	0	Back	5	-	Full	133322	683	23.27	24.00	1.183	-0.04	0.758	0.897
53	LTE Band 12	10M	QPSK	1	0	Back	5	-	P-Sensor On	23095	707.5	21.10	22.00	1.230	-0.11	0.829	1.020
54	LTE Band 13	10M	QPSK	1	0	Back	5	-	P-Sensor On	23230	782	21.23	22.00	1.194	-0.02	0.919	1.097
55	LTE Band 26	15M	QPSK	75	0	Back	5	-	P-Sensor On	26865	831.5	20.31	21.00	1.172	0.06	0.945	1.108
56	LTE Band 66	20M	QPSK	50	24	Back	5	-	P-Sensor On	132072	1720	16.20	16.50	1.072	0.08	0.723	0.775
57	LTE Band 25	20M	QPSK	50	0	Back	5	-	P-Sensor On	26340	1880	17.70	18.00	1.072	-0.04	1.040	1.114
58	LTE Band 30	10M	QPSK	1	0	Back	5	-	P-Sensor On	27710	2310	16.39	17.00	1.151	-0.06	0.544	0.626
59	LTE Band 7	20M	QPSK	100	0	Back	5	Headset	P-Sensor On	21100	2535	19.52	20.00	1.117	-0.14	0.755	0.843

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Headset	Power Mode	Power Class	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
60	LTE Band 41	20M	QPSK	1	0	Back	5	-	P-Sensor On	3	40185	2549.5	22.04	22.50	1.112	62.9	1.006	-0.1	0.963	1.077

<WLAN 2.4GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Headset	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
61	WLAN2.4GHz	802.11b 1Mbps	Back	5	-	Full	6	2437	19.91	20.00	1.021	100	1.000	0.03	0.568	0.580

<WLAN 5GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Headset	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Max Area Scan SAR	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
62	WLAN5.3GHz	802.11a 6Mbps	Back	5	-	Full	64	5320	18.40	20.00	1.445	98.28	1.018	-0.03		0.709	1.043
	WLAN5.5GHz	802.11n-HT40 MCS0	Front	5	-	P-Sensor On	102	5510	15.08	16.00	1.236	96.32	1.038	0.01	0.755	0.293	0.376
63	WLAN5.5GHz	802.11n-HT40 MCS0	Back	5	-	P-Sensor On	102	5510	15.08	16.00	1.236	96.32	1.038	0.02	2.103	0.733	0.940
	WLAN5.5GHz	802.11n-HT40 MCS0	Back	5	-	P-Sensor On	110	5550	14.60	16.00	1.380	96.32	1.038	0		0.472	0.676
	WLAN5.5GHz	802.11n-HT40 MCS0	Back	5	-	P-Sensor On	134	5670	14.15	16.00	1.530	96.32	1.038	0.03		0.654	1.039
	WLAN 5.8GHz	802.11a 6Mbps	Front	5	-	P-Sensor On	157	5785	15.12	16.00	1.225	98.28	1.018	-0.02	0.986	0.341	0.425
	WLAN 5.8GHz	802.11a 6Mbps	Back	5	-	P-Sensor On	157	5785	15.12	16.00	1.225	98.28	1.018	0.01	1.533	0.590	0.736
64	WLAN 5.8GHz	802.11a 6Mbps	Back	5	-	P-Sensor On	149	5745	14.19	16.00	1.517	98.28	1.018	0.18		0.537	0.829
	WLAN 5.8GHz	802.11a 6Mbps	Back	5	-	P-Sensor On	165	5825	14.68	16.00	1.355	98.28	1.018	0.01		0.563	0.777

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Headset	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
65	Bluetooth	1Mbps	Back	5	-	Full	78	2480	8.35	10.00	1.462	76.9	1.083	0.09	0.022	0.035

**14.4 Product specific 10g SAR****<GSM SAR>**

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
66	GSM850	GPRS 2 Tx slots	Back	0	Full	251	848.8	31.86	33.00	1.300	0.14	2.260	2.938
67	GSM1900	GPRS 2 Tx slots	Bottom Side	0	Handheld On	512	1850.2	26.73	28.00	1.340	0.14	2.050	2.746

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
68	WCDMA Band V	RMC 12.2Kbps	Back	0	Full	4182	836.4	23.90	24.00	1.023	0.07	2.38	2.435
69	WCDMA Band IV	RMC 12.2Kbps	Bottom Side	0	Handheld On	1413	1732.6	18.97	19.00	1.007	0.08	1.840	1.853
70	WCDMA Band II	RMC 12.2Kbps	Bottom Side	0	Handheld On	9262	1852.4	20.44	20.50	1.014	0.02	2.310	2.342

<CDMA2000 SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
71	CDMA2000 BC10	RTAP 153.6Kbps	Back	0	Full	580	820.5	25.20	25.50	1.072	-0.15	2.390	2.561
72	CDMA2000 BC0	RTAP 153.6Kbps	Back	0	Full	384	836.52	25.00	25.50	1.122	-0.05	2.44	2.738
73	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Side	0	Handheld On	1175	1908.75	21.49	22.00	1.125	0	2.67	3.003

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
74	LTE Band 12	10M	QPSK	1	0	Back	0	Full	23095	707.5	22.68	24.00	1.355	-0.09	1.71	2.317
75	LTE Band 13	10M	QPSK	1	0	Back	0	Full	23230	782	22.85	24.00	1.303	-0.04	1.28	1.668
76	LTE Band 26	15M	QPSK	1	0	Back	0	Full	26865	831.5	23.05	24.00	1.245	0.03	1.24	1.543
77	LTE Band 66	20M	QPSK	50	24	Back	0	Handheld On	132322	1745	18.49	19.00	1.125	0	1.62	1.822
78	LTE Band 25	20M	QPSK	50	0	Bottom Side	0	Handheld On	26590	1905	19.90	20.50	1.148	0.01	2.22	2.549
79	LTE Band 30	10M	QPSK	25	0	Back	0	Handheld On	27710	2310	19.66	20.00	1.081	0.09	2.24	2.422
80	LTE Band 7	20M	QPSK	1	0	Back	0	Handheld On	20850	2510	20.44	21.00	1.138	0.06	1.79	2.036

**<TDD LTE SAR>**

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Class	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
81	LTE Band 41	20M	QPSK	1	0	Back	0	3	Full	41490	2680	23.37	24.00	1.156	62.9	1.006	0.06	2.02	2.349

<WLAN 5GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
82	WLAN5.3GHz	802.11a 6Mbps	Front	0	Full	56	5280	19.03	20.00	1.250	98.28	1.018	0	0.667	0.849
83	WLAN 5.5GHz	802.11n-HT40 MCS0	Front	0	Full	110	5550	19.25	19.50	1.059	96.32	1.038	0	1.57	1.726



14.5 Repeated SAR Measurement

<1g SAR>

No.	Band	Mode	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Class	Headset	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	GSM850	GPRS 2 Tx slots	-	-	-	-	Back	5	-	-	Hotspot On/ P-Sensor On	128	824.2	29.37	30.00	1.156	-	-	-0.04	1.160	1	1.341
2nd	GSM850	GPRS 2 Tx slots	-	-	-	-	Back	5	-	-	Hotspot On/ P-Sensor On	128	824.2	29.37	30.00	1.156	-	-	0.1	1.130	1.027	1.306
1st	WCDMA Band IV	RMC 12.2Kbps	-	-	-	-	Back	5	-	-	Hotspot On/ P-Sensor On	1413	1732.6	16.46	16.50	1.009	-	-	0.08	0.913	1	0.921
2nd	WCDMA Band IV	RMC 12.2Kbps	-	-	-	-	Back	5	-	-	Hotspot On/ P-Sensor On	1413	1732.6	16.46	16.50	1.009	-	-	0.08	0.898	1.017	0.906
1st	CDMA 2000 BC1	RTAP 153.6Kbps	-	-	-	-	Back	5	-	-	Hotspot On	600	1880	19.30	19.50	1.047	-	-	0.13	1.200	1	1.257
2nd	CDMA 2000 BC1	RTAP 153.6Kbps	-	-	-	-	Back	5	-	-	Hotspot On	600	1880	19.30	19.50	1.047	-	-	0.01	1.190	1.008	1.246
1st	LTE Band 13	-	10M	QPSK	1	0	Back	5	-	-	Hotspot On/ P-Sensor On	23230	782	21.23	22.00	1.194	-	-	-0.02	0.919	1	1.097
2nd	LTE Band 13	-	10M	QPSK	1	0	Back	5	-	-	Hotspot On/ P-Sensor On	23230	782	21.23	22.00	1.194	-	-	0.06	0.903	1.018	1.078
1st	LTE Band 41	-	20M	QPSK	1	0	Back	5	3	-	P-Sensor On	40185	2549.5	22.04	22.50	1.112	62.9	1.006	-0.1	0.963	1	1.077
2nd	LTE Band 41	-	20M	QPSK	1	0	Back	5	3	-	P-Sensor On	40185	2549.5	22.04	22.50	1.112	62.9	1.006	-0.03	0.958	1.005	1.071
1st	WLAN5.5GHz	802.11n-HT40 MCS0	-	-	-	-	Left Cheek	0	-	-	Receiver on	110	5550	13.69	14.50	1.205	96.32	1.038	0.01	0.905	1	1.132
2nd	WLAN5.5GHz	802.11n-HT40 MCS0	-	-	-	-	Left Cheek	0	-	-	Receiver on	110	5550	13.69	14.50	1.205	96.32	1.038	0.06	0.903	1.002	1.129



<10g SAR>

No.	Band	Mode	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Class	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Ratio	Reported 10g SAR (W/kg)
1st	CDMA2000 BC0	RTAP 153.6Kbps	-	-	-	-	Back	0	-	Full	384	836.52	25.00	25.50	1.122	-	-	-0.05	2.440	1	2.738
2nd	CDMA2000 BC0	RTAP 153.6Kbps	-	-	-	-	Back	0	-	Full	384	836.52	25.00	25.50	1.122	-	-	-0.05	2.380	1.025	2.670
1st	CDMA2000 BC1	RTAP 153.6Kbps	-	-	-	-	Bottom Side	0	-	Handheld On	1175	1908.75	21.49	22.00	1.125	-	-	0	2.670	1	3.003
2nd	CDMA2000 BC1	RTAP 153.6Kbps	-	-	-	-	Bottom Side	0	-	Handheld On	1175	1908.75	21.49	22.00	1.125	-	-	-0.03	2.520	1.060	2.834
1st	LTE Band 30	-	10M	QPSK	25	0	Back	0	-	Handheld On	27710	2310	19.66	20.00	1.081			0.09	2.240	1	2.422
2nd	LTE Band 30	-	10M	QPSK	25	0	Back	0	-	Handheld On	27710	2310	19.66	20.00	1.081			-0.03	2.180	1.028	2.358
1st	LTE Band 41	-	20M	QPSK	1	0	Back	0	3	Full	41490	2680	23.37	24.00	1.156	62.9	1.006	0.06	2.020	1	2.349
2nd	LTE Band 41	-	20M	QPSK	1	0	Back	0	3	Full	41490	2680	23.37	24.00	1.156	62.9	1.006	0.01	2.010		2.338

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is $\geq 0.8\text{W/kg}$.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR $< 1.45\text{W/kg}$, only one repeated measurement is required.
3. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. The ratio is the difference in percentage between original and repeated *measured SAR*.
5. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

15. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Portable Handset		
		Head	Body-worn	Hotspot
1.	GSM Voice + WLAN2.4GHz	Yes	Yes	
2.	GPRS/EDGE + WLAN2.4GHz	Yes	Yes	Yes
3.	WCDMA + WLAN2.4GHz	Yes	Yes	Yes
4.	CDMA + WLAN2.4GHz	Yes	Yes	Yes
5.	LTE + WLAN2.4GHz	Yes	Yes	Yes
6.	GSM Voice + WLAN5.3/5.5GHz	Yes	Yes	
7.	GPRS/EDGE + WLAN5.3/5.5GHz	Yes	Yes	
8.	WCDMA + WLAN5.3/5.5GHz	Yes	Yes	
9.	CDMA + WLAN5.3/5.5GHz	Yes	Yes	
10.	LTE + WLAN5.3/5.5GHz	Yes	Yes	
11.	GSM Voice + WLAN5.2/5.8GHz	Yes	Yes	
12.	GPRS/EDGE + WLAN5.2/5.8GHz	Yes	Yes	Yes
13.	WCDMA + WLAN5.2/5.8GHz	Yes	Yes	Yes
14.	CDMA + WLAN5.2/5.8GHz	Yes	Yes	Yes
15.	LTE + WLAN5.2/5.8GHz	Yes	Yes	Yes
16.	GSM Voice + Bluetooth	Yes	Yes	
17.	GPRS/EDGE + Bluetooth	Yes	Yes	Yes
18.	WCDMA + Bluetooth	Yes	Yes	Yes
19.	CDMA + Bluetooth	Yes	Yes	Yes
20.	LTE + Bluetooth	Yes	Yes	Yes

General Note:

- This is a variant report for XT1980-3, based on the similarity between two models, we re-test WLAN5.5/5.8GHz since the reduced power level is different for receiver on and P-Sensor, and verified the worse cases from reference report (Sporton Report Number FA8D2801) for difference. For co-located SAR analysis, we always chose the worst case to do co-located.
- This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
- EUT will choose each GSM, WCDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
- This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
- This device 2.4GHz WLAN/ 5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WLAN Direct (GC/GO), and 5.3GHz / 5.5GHz supports WLAN Direct (GC only).
- EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment though they have independent antenna.
- WLAN 2.4GHz and Bluetooth share the same antenna so can't transmit simultaneously.
- According to the character of the EUT, WLAN 5GHz and Bluetooth can't transmit simultaneously.
- The reported SAR summation is calculated based on the same configuration and test position.
- Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - 1g Scalar SAR summation < 1.6W/kg and 10g Scalar SAR summation < 4.0W/kg.
 - $SPLSR = (SAR1 + SAR2)^{1.5} / (\min. \text{ separation distance, mm})$, and the peak separation distance is determined from the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
 - If $SPLSR \leq 0.04$ for 1g SAR, $SPLSR \leq 0.10$ for 10g SAR simultaneously transmission SAR measurement is not necessary.
 - Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg and 10g SAR < 4.0W/kg.
 - The SPLSR calculated results please refer to section 15.5.

15.1 Head Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
GSM	GSM850	Right Cheek	0.358	1.003	1.138	0.024	1.36	1.50	0.38
		Right Tilted	0.190	1.003	1.138	0.026	1.19	1.33	0.22
		Left Cheek	0.256	1.003	1.138	0.096	1.26	1.39	0.35
		Left Tilted	0.175	0.474	0.752	0.038	0.65	0.93	0.21
	GSM1900	Right Cheek	0.086	1.003	1.138	0.024	1.09	1.22	0.11
		Right Tilted	0.066	1.003	1.138	0.026	1.07	1.20	0.09
		Left Cheek	0.113	1.003	1.138	0.096	1.12	1.25	0.21
		Left Tilted	0.073	0.474	0.752	0.038	0.55	0.83	0.11
WCDMA	Band V	Right Cheek	0.290	1.003	1.138	0.024	1.29	1.43	0.31
		Right Tilted	0.120	1.003	1.138	0.026	1.12	1.26	0.15
		Left Cheek	0.174	1.003	1.138	0.096	1.18	1.31	0.27
		Left Tilted	0.126	0.474	0.752	0.038	0.60	0.88	0.16
	Band IV	Right Cheek	0.163	1.003	1.138	0.024	1.17	1.30	0.19
		Right Tilted	0.095	1.003	1.138	0.026	1.10	1.23	0.12
		Left Cheek	0.242	1.003	1.138	0.096	1.25	1.38	0.34
		Left Tilted	0.106	0.474	0.752	0.038	0.58	0.86	0.14
	Band II	Right Cheek	0.125	1.003	1.138	0.024	1.13	1.26	0.15
		Right Tilted	0.082	1.003	1.138	0.026	1.09	1.22	0.11
		Left Cheek	0.137	1.003	1.138	0.096	1.14	1.28	0.23
		Left Tilted	0.089	0.474	0.752	0.038	0.56	0.84	0.13
CDMA2000	BC10	Right Cheek	0.325	1.003	1.138	0.024	1.33	1.46	0.35
		Right Tilted	0.149	1.003	1.138	0.026	1.15	1.29	0.18
		Left Cheek	0.195	1.003	1.138	0.096	1.20	1.33	0.29
		Left Tilted	0.145	0.474	0.752	0.038	0.62	0.90	0.18
	BC0	Right Cheek	0.317	1.003	1.138	0.024	1.32	1.46	0.34
		Right Tilted	0.152	1.003	1.138	0.026	1.16	1.29	0.18
		Left Cheek	0.194	1.003	1.138	0.096	1.20	1.33	0.29
		Left Tilted	0.144	0.474	0.752	0.038	0.62	0.90	0.18
	BC1	Right Cheek	0.114	1.003	1.138	0.024	1.12	1.25	0.14
		Right Tilted	0.071	1.003	1.138	0.026	1.07	1.21	0.10
		Left Cheek	0.174	1.003	1.138	0.096	1.18	1.31	0.27
		Left Tilted	0.112	0.474	0.752	0.038	0.59	0.86	0.15



WWAN Band		Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
LTE	Band 71	Right Cheek	0.147	1.003	1.138	0.024	1.15	1.29	0.17
		Right Tilted	<0.001	1.003	1.138	0.026	1.00	1.14	0.03
		Left Cheek	0.092	1.003	1.138	0.096	1.10	1.23	0.19
		Left Tilted	<0.001	0.474	0.752	0.038	0.48	0.75	0.04
	Band 12	Right Cheek	0.293	1.003	1.138	0.024	1.30	1.43	0.32
		Right Tilted	0.142	1.003	1.138	0.026	1.15	1.28	0.17
		Left Cheek	0.221	1.003	1.138	0.096	1.22	1.36	0.32
		Left Tilted	0.130	0.474	0.752	0.038	0.60	0.88	0.17
	Band 13	Right Cheek	0.302	1.003	1.138	0.024	1.31	1.44	0.33
		Right Tilted	0.138	1.003	1.138	0.026	1.14	1.28	0.16
		Left Cheek	0.197	1.003	1.138	0.096	1.20	1.34	0.29
		Left Tilted	0.108	0.474	0.752	0.038	0.58	0.86	0.15
	Band 26	Right Cheek	0.334	1.003	1.138	0.024	1.34	1.47	0.36
		Right Tilted	0.152	1.003	1.138	0.026	1.16	1.29	0.18
		Left Cheek	0.214	1.003	1.138	0.096	1.22	1.35	0.31
		Left Tilted	0.111	0.474	0.752	0.038	0.59	0.86	0.15
	Band 66	Right Cheek	0.185	1.003	1.138	0.024	1.19	1.32	0.21
		Right Tilted	0.103	1.003	1.138	0.026	1.11	1.24	0.13
		Left Cheek	0.332	1.003	1.138	0.096	1.34	1.47	0.43
		Left Tilted	0.135	0.474	0.752	0.038	0.61	0.89	0.17
	Band 25	Right Cheek	0.106	1.003	1.138	0.024	1.11	1.24	0.13
		Right Tilted	0.064	1.003	1.138	0.026	1.07	1.20	0.09
		Left Cheek	0.172	1.003	1.138	0.096	1.18	1.31	0.27
		Left Tilted	0.110	0.474	0.752	0.038	0.58	0.86	0.15
	Band 30	Right Cheek	0.286	1.003	1.138	0.024	1.29	1.42	0.31
		Right Tilted	0.170	1.003	1.138	0.026	1.17	1.31	0.20
		Left Cheek	0.326	1.003	1.138	0.096	1.33	1.46	0.42
		Left Tilted	0.150	0.474	0.752	0.038	0.62	0.90	0.19
	Band 7	Right Cheek	0.188	1.003	1.138	0.024	1.19	1.33	0.21
		Right Tilted	0.126	1.003	1.138	0.026	1.13	1.26	0.15
		Left Cheek	0.243	1.003	1.138	0.096	1.25	1.38	0.34
		Left Tilted	0.074	0.474	0.752	0.038	0.55	0.83	0.11
	Band 41	Right Cheek	0.095	1.003	1.138	0.024	1.10	1.23	0.12
		Right Tilted	0.067	1.003	1.138	0.026	1.07	1.21	0.09
		Left Cheek	0.250	1.003	1.138	0.096	1.25	1.39	0.35
		Left Tilted	0.039	0.474	0.752	0.038	0.51	0.79	0.08



15.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	1+2			1+3			1+4		
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth	Summed	SPLSR	Case No	Summed	SPLSR	Case No	Summed	SPLSR	Case No
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			1g SAR (W/kg)			1g SAR (W/kg)		
GSM	GSM850	Front	1.066	0.391	0.480	0.044	1.46			1.55			1.11		
		Back	1.434	0.726	1.112	0.075	2.16	0.02	#01	2.55	0.03	#37	1.51		
		Left Side	0.121				0.12			0.12			0.12		
		Right Side	0.382	0.420	1.112	0.037	0.80			1.49			0.42		
		Top Side		0.726	1.112	0.017	0.73			1.11			0.02		
		Bottom Side	0.850				0.85			0.85			0.85		
	GSM1900	Front	0.951	0.391	0.480	0.044	1.34			1.43			1.00		
		Back	1.362	0.726	1.112	0.075	2.09	0.02	#03	2.47	0.03	#38	1.44		
		Left Side	0.071				0.07			0.07			0.07		
		Right Side	0.051	0.420	1.112	0.037	0.47			1.16			0.09		
		Top Side		0.726	1.112	0.017	0.73			1.11			0.02		
WCDMA	Band V	Front	0.731	0.391	0.480	0.044	1.12			1.21			0.78		
		Back	1.399	0.726	1.112	0.075	2.13	0.02	#05	2.51	0.03	#39	1.47		
		Left Side	0.100				0.10			0.10			0.10		
		Right Side	0.329	0.420	1.112	0.037	0.75			1.44			0.37		
		Top Side		0.726	1.112	0.017	0.73			1.11			0.02		
	Band IV	Front	1.070	0.391	0.480	0.044	1.46			1.55			1.11		
		Back	1.383	0.726	1.112	0.075	2.11	0.02	#07	2.50	0.03	#40	1.46		
		Left Side	0.114				0.11			0.11			0.11		
		Right Side	0.080	0.420	1.112	0.037	0.50			1.19			0.12		
		Top Side		0.726	1.112	0.017	0.73			1.11			0.02		
	Band II	Front	0.848	0.391	0.480	0.044	1.24			1.33			0.89		
		Back	1.225	0.726	1.112	0.075	1.95	0.02	#09	2.34	0.02	#41	1.30		
		Left Side	0.057				0.06			0.06			0.06		
		Right Side	0.058	0.420	1.112	0.037	0.48			1.17			0.10		
		Top Side		0.726	1.112	0.017	0.73			1.11			0.02		
CDMA2000	BC10	Front	0.692	0.391	0.480	0.044	1.08			1.17			0.74		
		Back	1.127	0.726	1.112	0.075	1.85	0.02	#42	2.24	0.02	#72	1.20		
		Left Side	0.094				0.09			0.09			0.09		
		Right Side	0.298	0.420	1.112	0.037	0.72			1.41			0.34		
		Top Side		0.726	1.112	0.017	0.73			1.11			0.02		
	BC0	Front	0.716	0.391	0.480	0.044	1.11			1.20			0.76		
		Back	1.198	0.726	1.112	0.075	1.92	0.02	#73	2.31	0.02	#74	1.27		
		Left Side	0.100				0.10			0.10			0.10		
		Right Side	0.315	0.420	1.112	0.037	0.74			1.43			0.35		
		Top Side		0.726	1.112	0.017	0.73			1.11			0.02		
	BC1	Front	0.983	0.391	0.480	0.044	1.37			1.46			1.03		
		Back	1.361	0.726	1.112	0.075	2.09	0.02	#43	2.47	0.02	#75	1.44		
		Left Side	0.077				0.08			0.08			0.08		
		Right Side	0.062	0.420	1.112	0.037	0.48			1.17			0.10		
		Top Side		0.726	1.112	0.017	0.73			1.11			0.02		
		Bottom Side	1.434				1.43			1.43			1.43		



WWAN Band	Exposure Position	1	2	3	4	1+2			1+3			1+4		
		WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth	Summed 1g SAR (W/kg)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			1g SAR (W/kg)			1g SAR (W/kg)		
LTE	Band 71	Front	0.532	0.391	0.480	0.044	0.92		1.01			0.58		
		Back	0.898	0.726	1.112	0.075	1.62	0.01 #17	2.01	0.02 #48		0.97		
		Left Side	0.186				0.19		0.19			0.19		
		Right Side	0.347	0.420	1.112	0.037	0.77		1.46			0.38		
		Top Side		0.726	1.112	0.017	0.73		1.11			0.02		
		Bottom Side	0.678				0.68		0.68			0.68		
	Band 12	Front	0.732	0.391	0.480	0.044	1.12		1.21			0.78		
		Back	1.116	0.726	1.112	0.075	1.84	0.02 #19	2.23	0.02 #49		1.19		
		Left Side	0.189				0.19		0.19			0.19		
		Right Side	0.380	0.420	1.112	0.037	0.80		1.49			0.42		
		Top Side		0.726	1.112	0.017	0.73		1.11			0.02		
		Bottom Side	0.572				0.57		0.57			0.57		
	Band 13	Front	0.813	0.391	0.480	0.044	1.20		1.29			0.86		
		Back	1.242	0.726	1.112	0.075	1.97	0.02 #21	2.35	0.02 #50		1.32		
		Left Side	0.207				0.21		0.21			0.21		
		Right Side	0.379	0.420	1.112	0.037	0.80		1.49			0.42		
		Top Side		0.726	1.112	0.017	0.73		1.11			0.02		
		Bottom Side	0.616				0.62		0.62			0.62		
	Band 26	Front	0.814	0.391	0.480	0.044	1.21		1.29			0.86		
		Back	1.383	0.726	1.112	0.075	2.11	0.02 #23	2.50	0.02 #51		1.46		
		Left Side	0.094				0.09		0.09			0.09		
		Right Side	0.326	0.420	1.112	0.037	0.75		1.44			0.36		
		Top Side		0.726	1.112	0.017	0.73		1.11			0.02		
		Bottom Side	0.643				0.64		0.64			0.64		
	Band 66	Front	0.995	0.391	0.480	0.044	1.39		1.48			1.04		
		Back	1.329	0.726	1.112	0.075	2.06	0.02 #25	2.44	0.03 #52		1.40		
		Left Side	0.082				0.08		0.08			0.08		
		Right Side	0.084	0.420	1.112	0.037	0.50		1.20			0.12		
		Top Side		0.726	1.112	0.017	0.73		1.11			0.02		
		Bottom Side	1.206				1.21		1.21			1.21		
	Band 25	Front	0.986	0.391	0.480	0.044	1.38		1.47			1.03		
		Back	1.329	0.726	1.112	0.075	2.06	0.02 #27	2.44	0.03 #53		1.40		
		Left Side	0.064				0.06		0.06			0.06		
		Right Side	0.040	0.420	1.112	0.037	0.46		1.15			0.08		
		Top Side		0.726	1.112	0.017	0.73		1.11			0.02		
		Bottom Side	1.311				1.31		1.31			1.31		
	Band 30	Front	0.414	0.391	0.480	0.044	0.81		0.89			0.46		
		Back	1.098	0.726	1.112	0.075	1.82	0.02 #29	2.21	0.02 #54		1.17		
		Left Side	0.435				0.44		0.44			0.44		
		Right Side		0.420	1.112	0.037	0.42		1.11			0.04		
		Top Side		0.726	1.112	0.017	0.73		1.11			0.02		
		Bottom Side	0.642				0.64		0.64			0.64		
	Band 7	Front	0.647	0.391	0.480	0.044	1.04		1.13			0.69		
		Back	1.291	0.726	1.112	0.075	2.02	0.02 #31	2.40	0.03 #76		1.37		
		Left Side	0.533				0.53		0.53			0.53		
		Right Side		0.420	1.112	0.037	0.42		1.11			0.04		
		Top Side		0.726	1.112	0.017	0.73		1.11			0.02		
		Bottom Side	0.440				0.44		0.44			0.44		
	Band 41	Front	0.527	0.391	0.480	0.044	0.92		1.01			0.57		
		Back	1.398	0.726	1.112	0.075	2.12	0.02 #33	2.51	0.03 #55		1.47		
		Left Side	0.574				0.57		0.57			0.57		
		Right Side		0.420	1.112	0.037	0.42		1.11			0.04		
		Top Side		0.726	1.112	0.017	0.73		1.11			0.02		
		Bottom Side	0.474				0.47		0.47			0.47		



15.3 Body-Worn Accessory Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	1+2			1+3			1+4		
			WWAN 1g SAR (W/kg)	2.4GHz WLAN 1g SAR (W/kg)	5GHz WLAN 1g SAR (W/kg)	Bluetooth h 1g SAR (W/kg)	Summed 1g SAR (W/kg)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Front	1.066	0.391	0.459	0.044	1.46			1.53			1.11		
		Back	1.434	0.726	1.160	0.075	2.16	0.02	#01	2.59	0.03	#02	1.51		
		Back with Headset	0.452				0.45			0.45			0.45		
	GSM1900	Front	0.951	0.391	0.459	0.044	1.34			1.41			1.00		
		Back	1.362	0.726	1.160	0.075	2.09	0.02	#03	2.52	0.03	#04	1.44		
		Back with Headset	0.710				0.71			0.71			0.71		
WCDMA	Band V	Front	0.731	0.391	0.459	0.044	1.12			1.19			0.78		
		Back	1.399	0.726	1.160	0.075	2.13	0.02	#05	2.56	0.03	#06	1.47		
		Back with Headset	0.990				0.99			0.99			0.99		
	Band IV	Front	1.070	0.391	0.459	0.044	1.46			1.53			1.11		
		Back	1.383	0.726	1.160	0.075	2.11	0.02	#07	2.54	0.03	#08	1.46		
		Back with Headset	0.808				0.81			0.81			0.81		
	Band II	Front	0.848	0.391	0.459	0.044	1.24			1.31			0.89		
		Back	1.225	0.726	1.160	0.075	1.95	0.02	#09	2.39	0.02	#10	1.30		
		Back with Headset	0.682				0.68			0.68			0.68		
CDMA2000	BC10	Front	0.775	0.391	0.459	0.044	1.17			1.23			0.82		
		Back	1.205	0.726	1.160	0.075	1.93	0.02	#11	2.37	0.02	#12	1.28		
		Back with Headset	0.894				0.89			0.89			0.89		
	BC0	Front	0.838	0.391	0.459	0.044	1.23			1.30			0.88		
		Back	1.217	0.726	1.160	0.075	1.94	0.02	#13	2.38	0.02	#14	1.29		
		Back with Headset	0.897				0.90			0.90			0.90		
	BC1	Front	0.927	0.391	0.459	0.044	1.32			1.39			0.97		
		Back	1.373	0.726	1.160	0.075	2.10	0.02	#15	2.53	0.03	#16	1.45		
		Back with Headset	0.837				0.84			0.84			0.84		
LTE	Band 71	Front	0.532	0.391	0.459	0.044	0.92			0.99			0.58		
		Back	0.898	0.726	1.160	0.075	1.62	0.01	#17	2.06	0.02	#18	0.97		
	Band 12	Front	0.732	0.391	0.459	0.044	1.12			1.19			0.78		
		Back	1.116	0.726	1.160	0.075	1.84	0.02	#19	2.28	0.02	#20	1.19		
	Band 13	Front	0.813	0.391	0.459	0.044	1.20			1.27			0.86		
		Back	1.242	0.726	1.160	0.075	1.97	0.02	#21	2.40	0.02	#22	1.32		
	Band 26	Back with Headset	1.194				1.19			1.19			1.19		
		Front	0.814	0.391	0.459	0.044	1.21			1.27			0.86		
		Back	1.383	0.726	1.160	0.075	2.11	0.02	#23	2.54	0.02	#24	1.46		
	Band 66	Back with Headset	1.254				1.25			1.25			1.25		
		Front	0.995	0.391	0.459	0.044	1.39			1.45			1.04		
		Back	1.329	0.726	1.160	0.075	2.06	0.02	#25	2.49	0.03	#26	1.40		
	Band 25	Back with Headset	0.593				0.59			0.59			0.59		
		Front	0.986	0.391	0.459	0.044	1.38			1.45			1.03		
		Back	1.329	0.726	1.160	0.075	2.06	0.02	#27	2.49	0.03	#28	1.40		
	Band 30	Back with Headset	0.717				0.72			0.72			0.72		
		Front	0.414	0.391	0.459	0.044	0.81			0.87			0.46		
		Back	1.098	0.726	1.160	0.075	1.82	0.02	#29	2.26	0.02	#30	1.17		
	Band 7	Front	0.647	0.391	0.459	0.044	1.04			1.11			0.69		
		Back	1.291	0.726	1.160	0.075	2.02	0.02	#31	2.45	0.03	#32	1.37		
		Back with Headset	1.296				1.30			1.30			1.30		
	Band 41	Front	0.527	0.391	0.459	0.044	0.92			0.99			0.57		
		Back	1.398	0.726	1.160	0.075	2.12	0.02	#33	2.56	0.03	#34	1.47		
	Band 41	Back with Headset	1.370				1.37			1.37			1.37		

15.4 Product specific 10g SAR Exposure Conditions

WWAN Band		Exposure Position	1	2	1+2		
			WWAN Bottom	5GHz WLAN	Summed 10g SAR (W/kg)	SPLSR	Case No
			10g SAR (W/kg)	10g SAR (W/kg)			
GSM	GSM850	Front	2.469	1.726	4.20	0.06	#77
		Back	3.029	0.981	4.01	0.05	#56
		Bottom Side	1.234		1.23		
	GSM1900	Front	2.251	1.726	3.98		
		Back	3.001	0.981	3.98		
		Bottom Side	3.523		3.52		
WCDMA	Band V	Front	2.796	1.726	4.52	0.06	#59
		Back	3.234	0.981	4.22	0.06	#60
		Bottom Side	1.386		1.39		
	Band IV	Front	2.598	1.726	4.32	0.06	#78
		Back	2.917	0.981	3.90		
		Bottom Side	3.081		3.08		
	Band II	Front	2.687	1.726	4.41	0.06	#57
		Back	3.123	0.981	4.10	0.05	#58
		Bottom Side	3.295		3.30		
CDMA2000	BC10	Front	2.784	1.726	4.51	0.06	#65
		Back	3.236	0.981	4.22	0.06	#66
		Bottom Side	1.341		1.34		
	BC0	Front	2.971	1.726	4.70	0.06	#61
		Back	3.422	0.981	4.40	0.06	#62
		Bottom Side	1.345		1.35		
	BC1	Front	2.704	1.726	4.43	0.06	#63
		Back	3.291	0.981	4.27	0.06	#64
		Bottom Side	3.554		3.55		
	Band 13	Front	2.954	0.981	3.94		
		Back	1.942	1.726	3.67		
		Bottom Side	3.075	0.981	4.06	0.05	#67
	Band 26	Front	2.402	1.726	4.13	0.05	#79
		Back	3.410	0.981	4.39	0.06	#70
		Bottom Side	1.159		1.16		
	Band 66	Front	1.923	1.726	3.65		
		Back	2.924	0.981	3.91		
		Bottom Side	2.823		2.82		
	Band 25	Front	2.697	1.726	4.42	0.06	#68
		Back	3.142	0.981	4.12	0.05	#69
		Bottom Side	3.249		3.25		
	Band 30	Front	1.557	1.726	3.28		
		Back	2.931	0.981	3.91		
		Bottom Side	1.633		1.63		
	Band 7	Front	1.159	1.726	2.89		
		Back	2.412	0.981	3.39		
	Band 41	Back	3.384	0.981	4.37	0.06	#71

Remark:

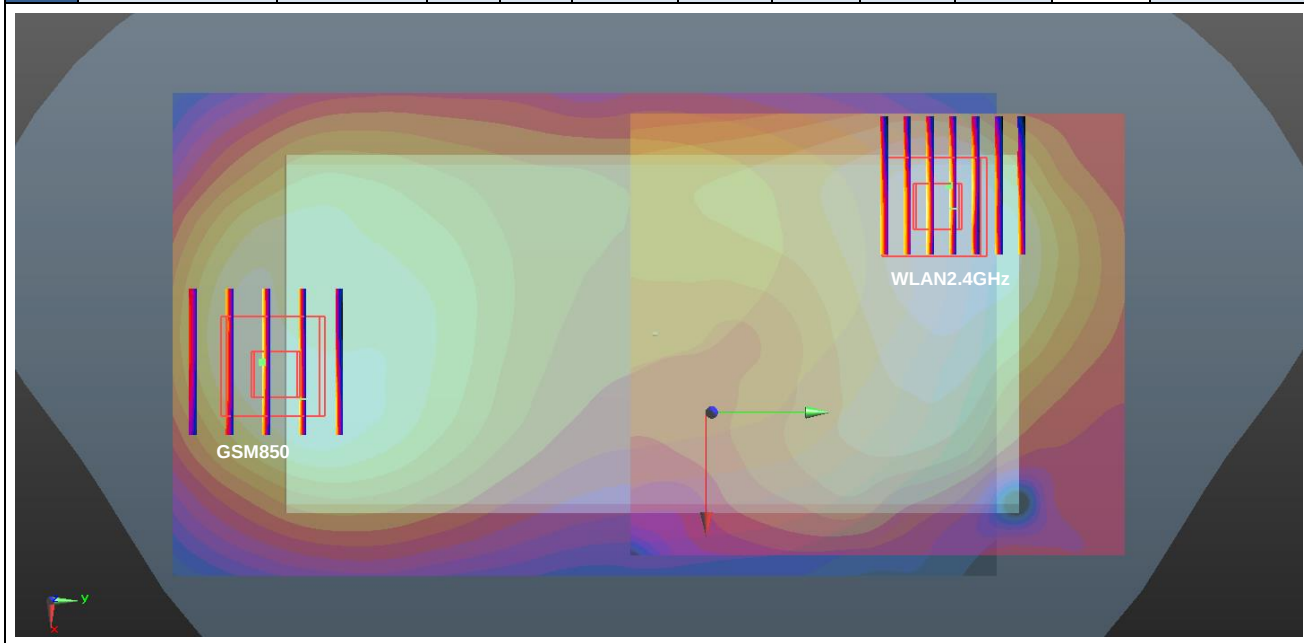
- For Bluetooth Product specific 10g stand-alone SAR is not required for a transmitter or antenna, due to 1g hotspot SAR is <1.2W/kg.
- If SPLSR ≤ 0.10 for 10g SAR, simultaneously transmission SAR measurement is not necessary.

15.5 SPLSR Evaluation and Analysis

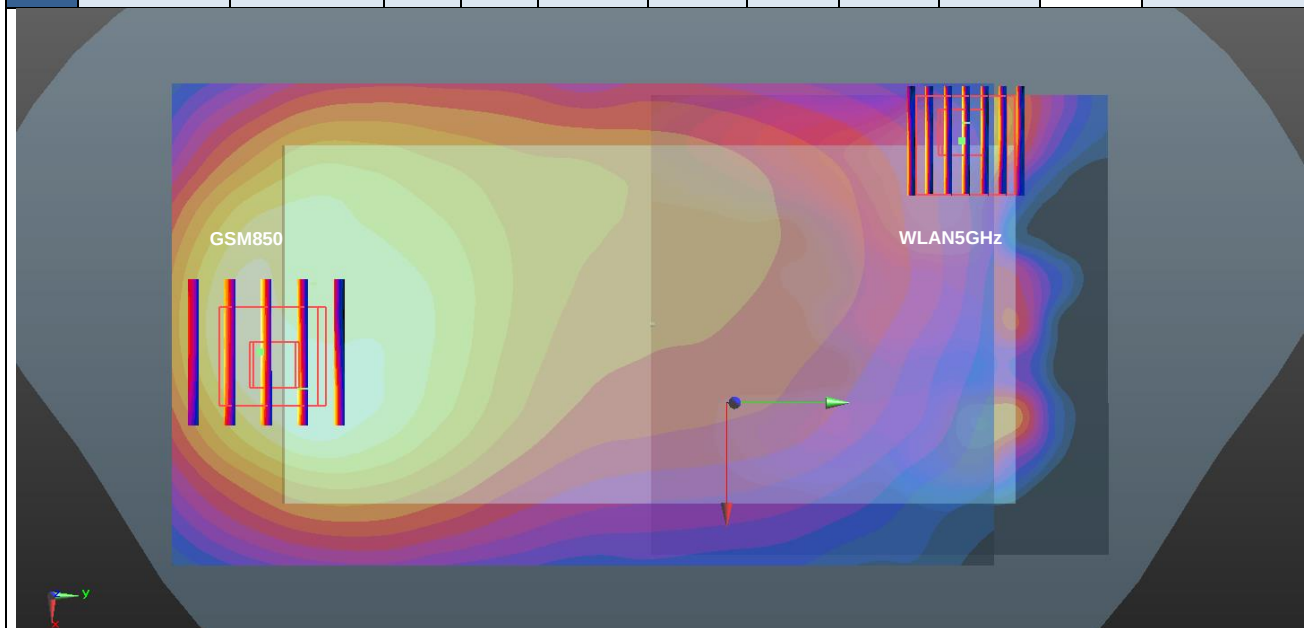
General Note:

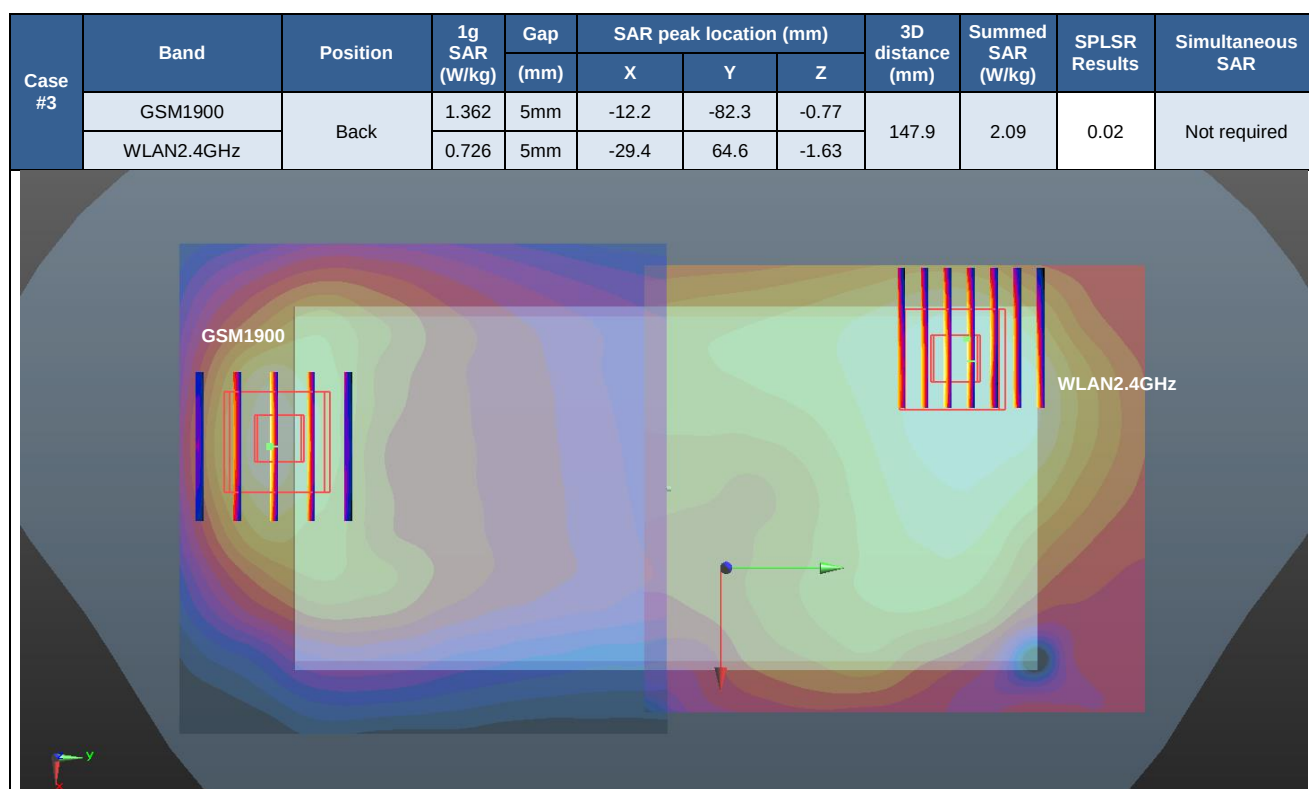
- When standalone SAR is measured for both antennas in the pair, the peak location separation distance is computed by the square root of $[(x_1-x_2)^2 + (y_1-y_2)^2 + (z_1-z_2)^2]$, where (x_1, y_1, z_1) and (x_2, y_2, z_2) are the coordinates in the area scans or extrapolated peak SAR locations in the zoom scans, as appropriate.
- $SPLSR = (SAR_1 + SAR_2)1.5 / (\text{min. separation distance, mm})$. If $SPLSR \leq 0.04$ for 1g SAR and $SPLSR \leq 0.10$ for 10g SAR, simultaneously transmission SAR measurement is not necessary.

Case #1	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM850	Back	1.434	5mm	12.4	-79.1	-0.96	149.7	2.16	0.02	Not required
	WLAN2.4GHz		0.726	5mm	-29.4	64.6	-1.63				

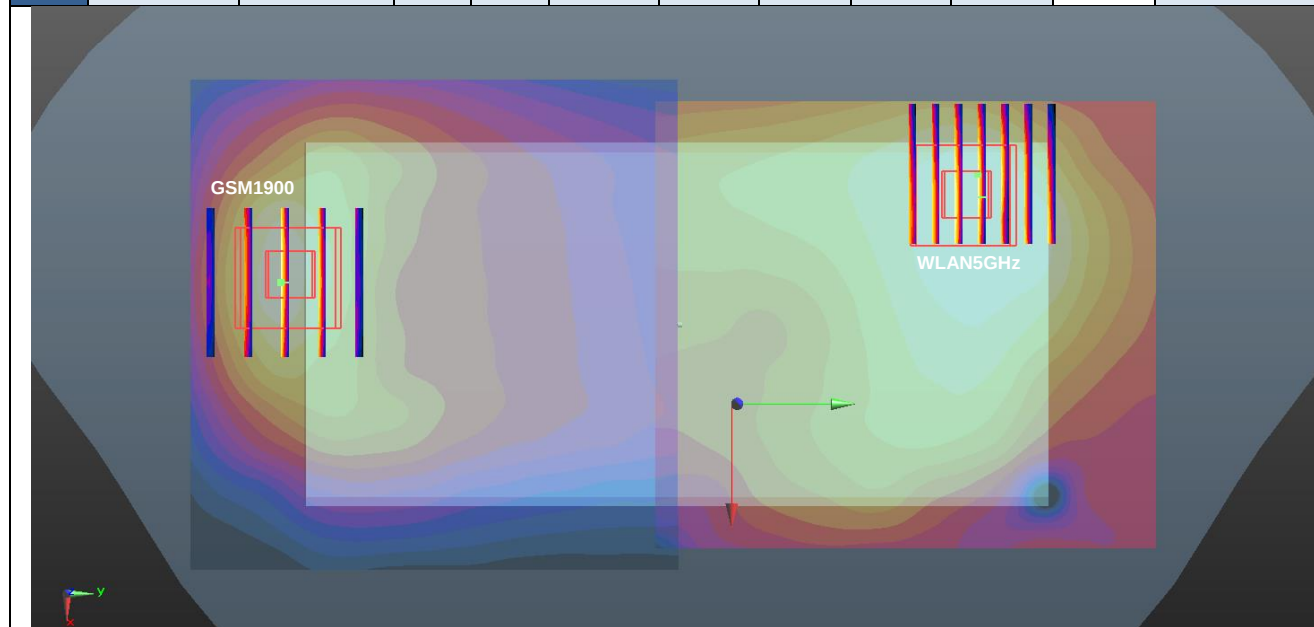


Case #2	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM850	Back	1.434	5mm	12.4	-79.1	-0.96	157.0	2.59	0.03	Not required
	WLAN5GHz		1.160	5mm	-42.4	68	-0.88				

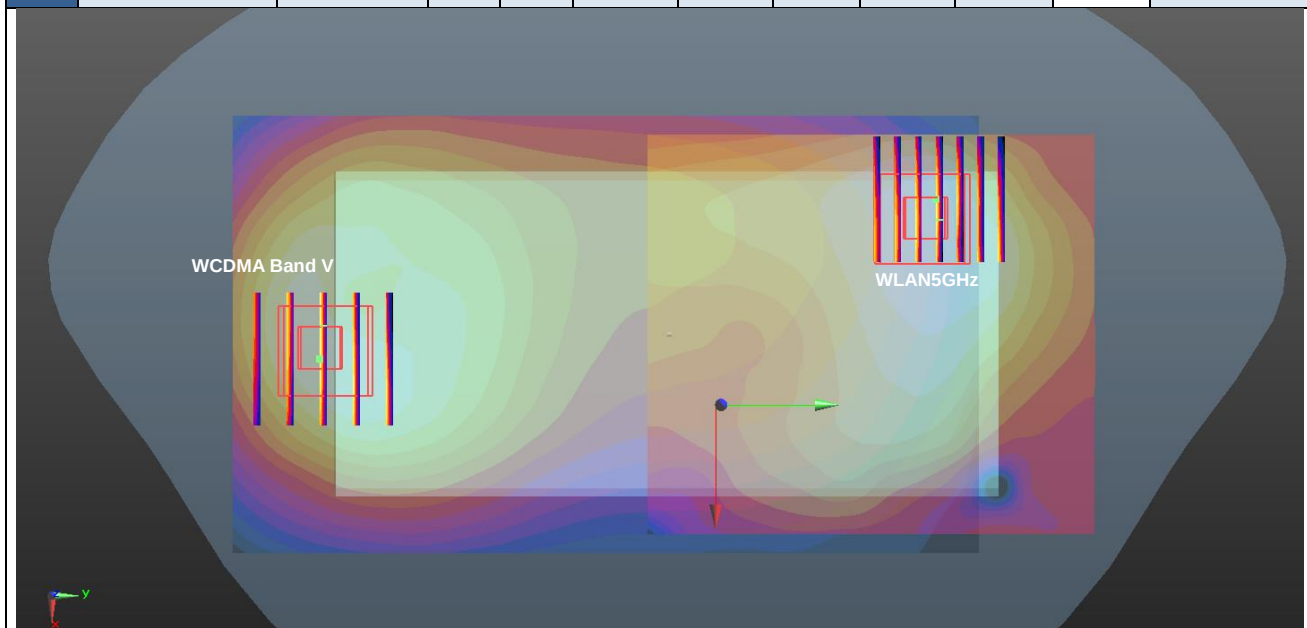




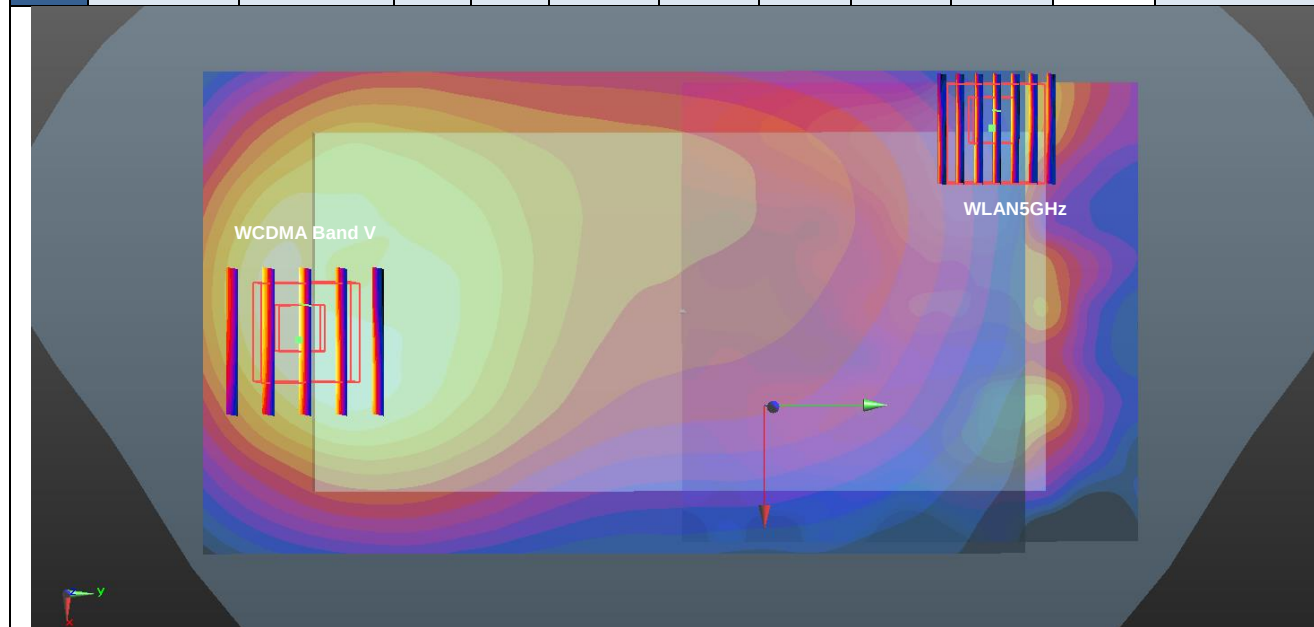
Case #4	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM1900	Back	1.362	5mm	-12.2	-82.3	-0.77	153.3	2.52	0.03	Not required
	WLAN5GHz		1.160	5mm	-42.4	68	-0.88				



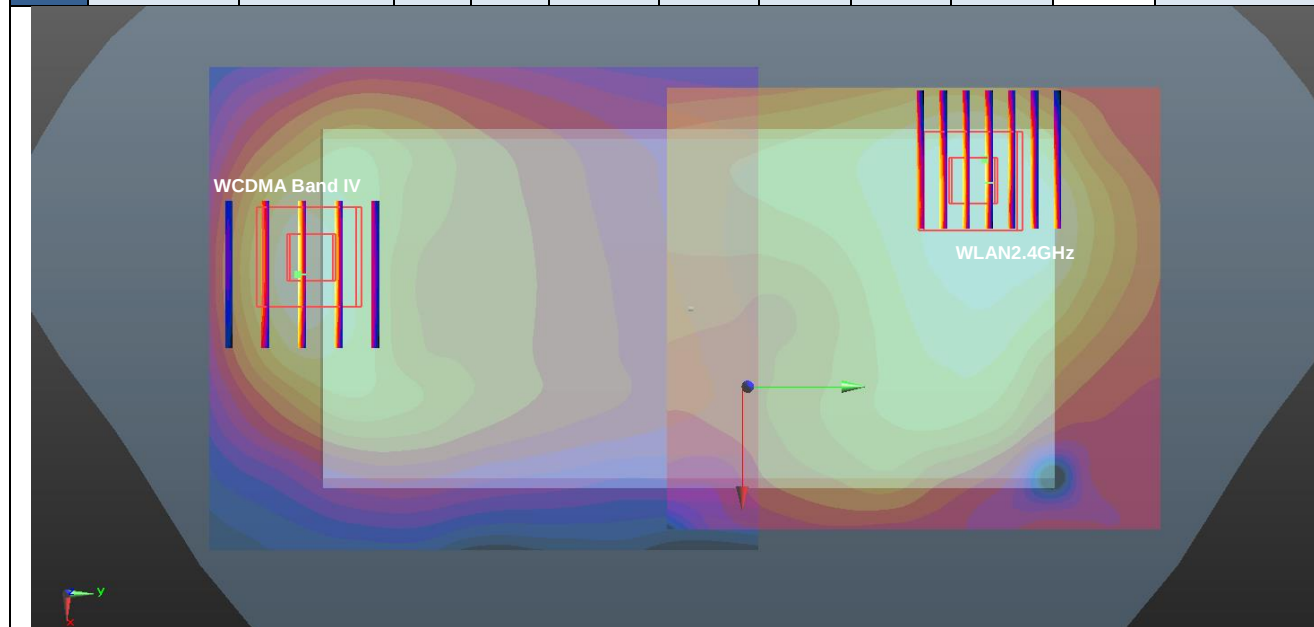
Case #5	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA Band V	Back	1.399	5mm	6	-82.4	-1	151.2	2.13	0.02	Not required
	WLAN2.4GHz		0.726	5mm	-29.4	64.6	-1.63				

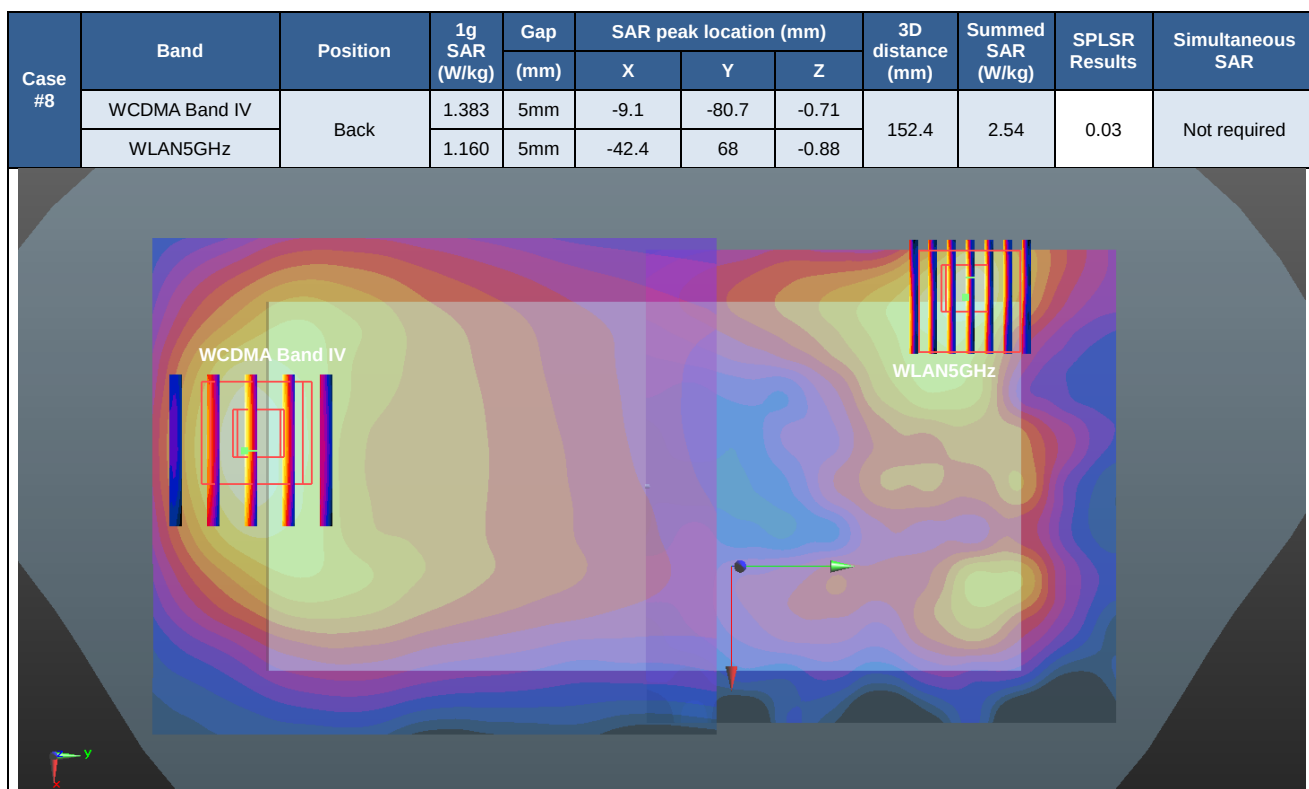


Case #6	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA Band V	Front	1.399	5mm	X	Y	Z	158.0	2.56	0.03	Not required
	WLAN5GHz		1.160	5mm	-42.4	68	-0.88				

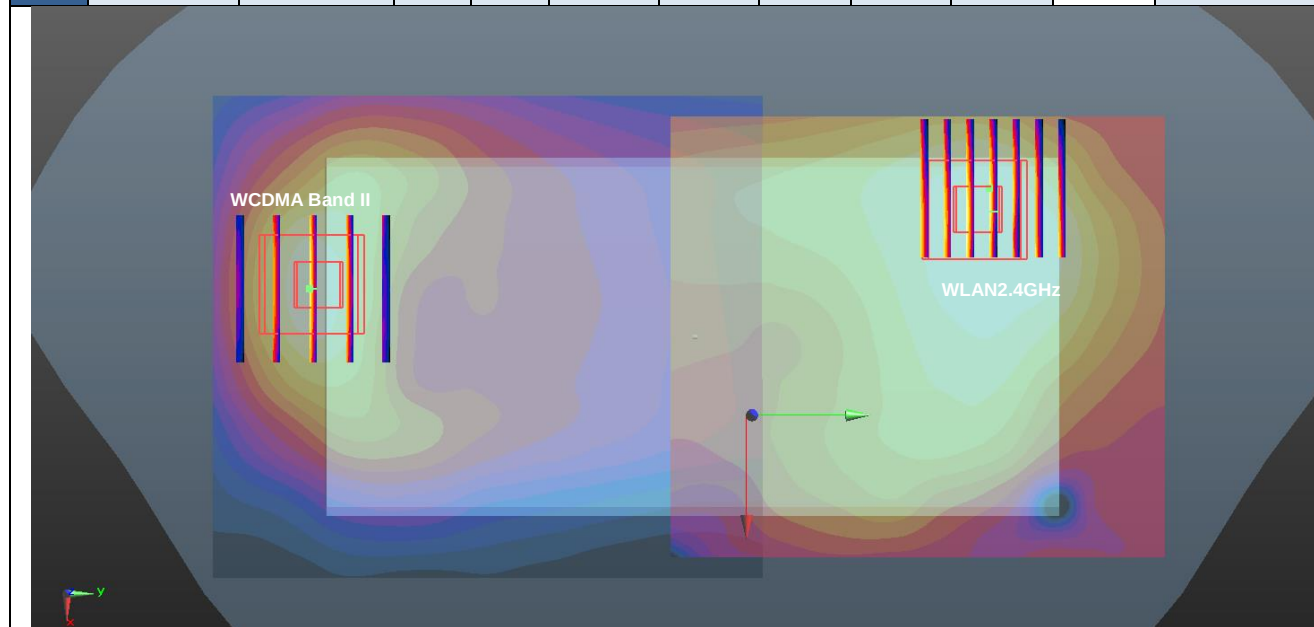


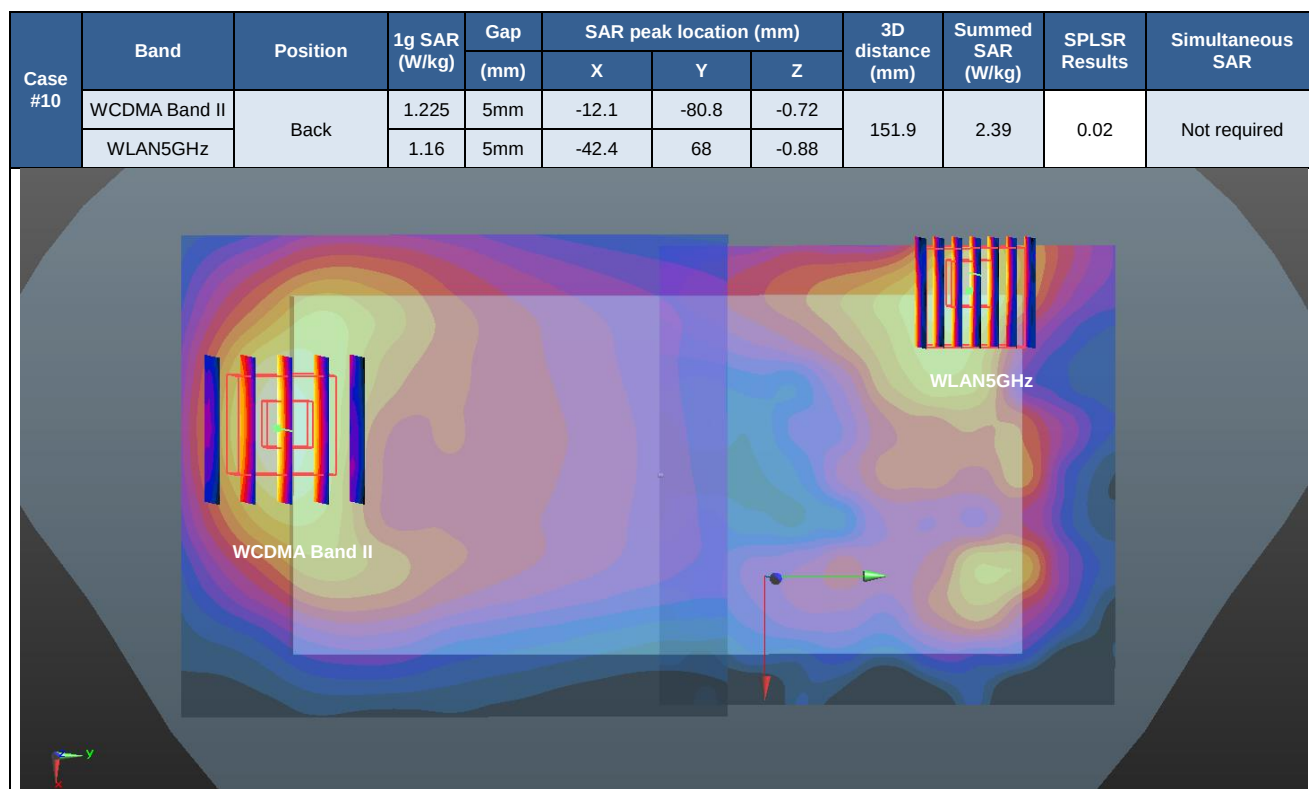
Case #7	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA Band IV	Back	1.383	5mm	-9.1	-80.7	-0.71	146.7	2.11	0.02	Not required
	WLAN2.4GHz		0.726	5mm	-29.4	64.6	-1.63				



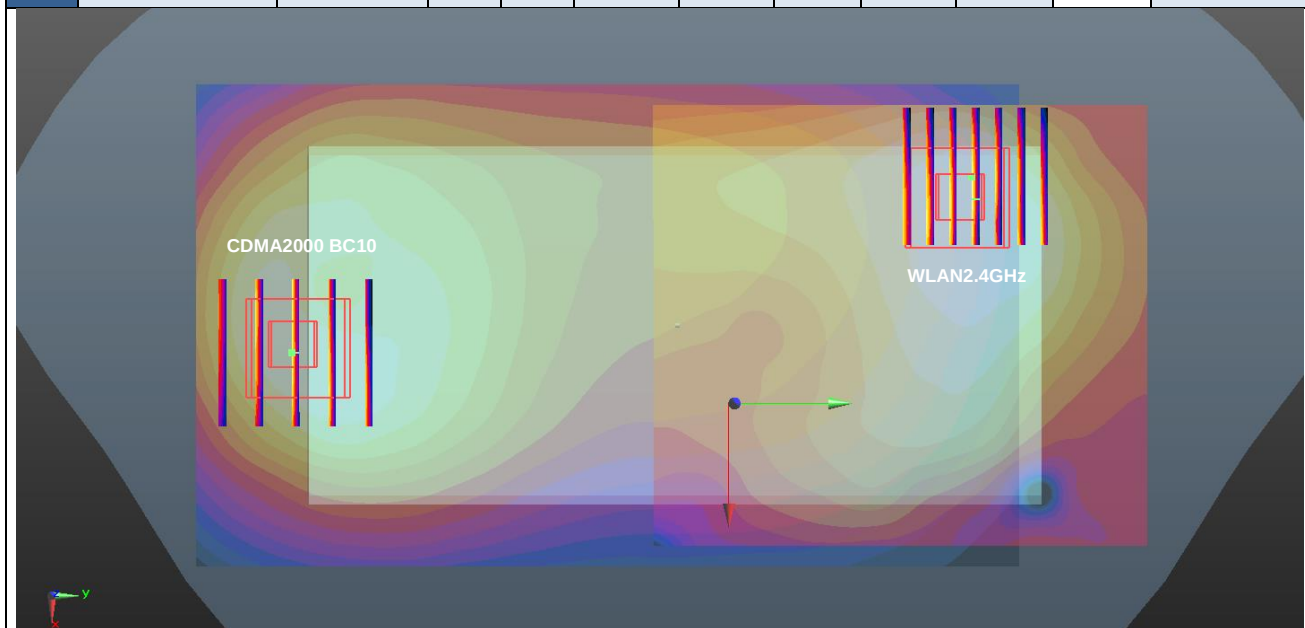


Case #9	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA Band II		1.225	5mm	X	Y	Z				
	WLAN2.4GHz		0.726	5mm	-29.4	64.6	-1.63				
		Back			-12.1	-80.8	-0.72	146.4	1.95	0.02	Not required

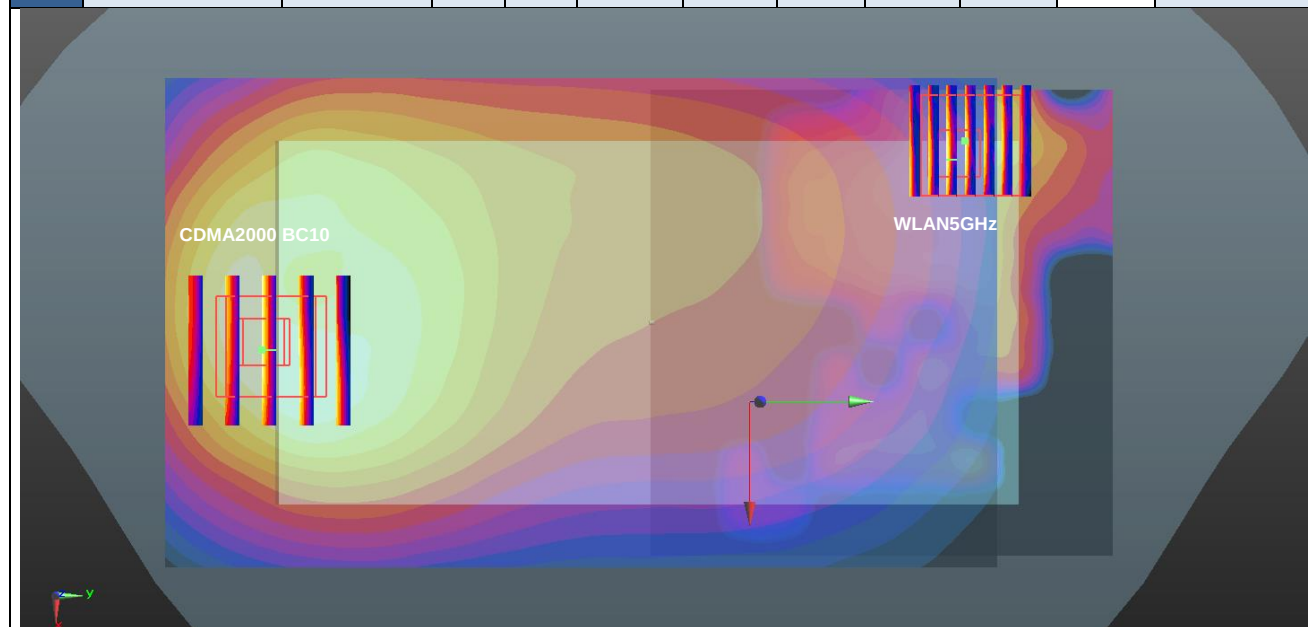




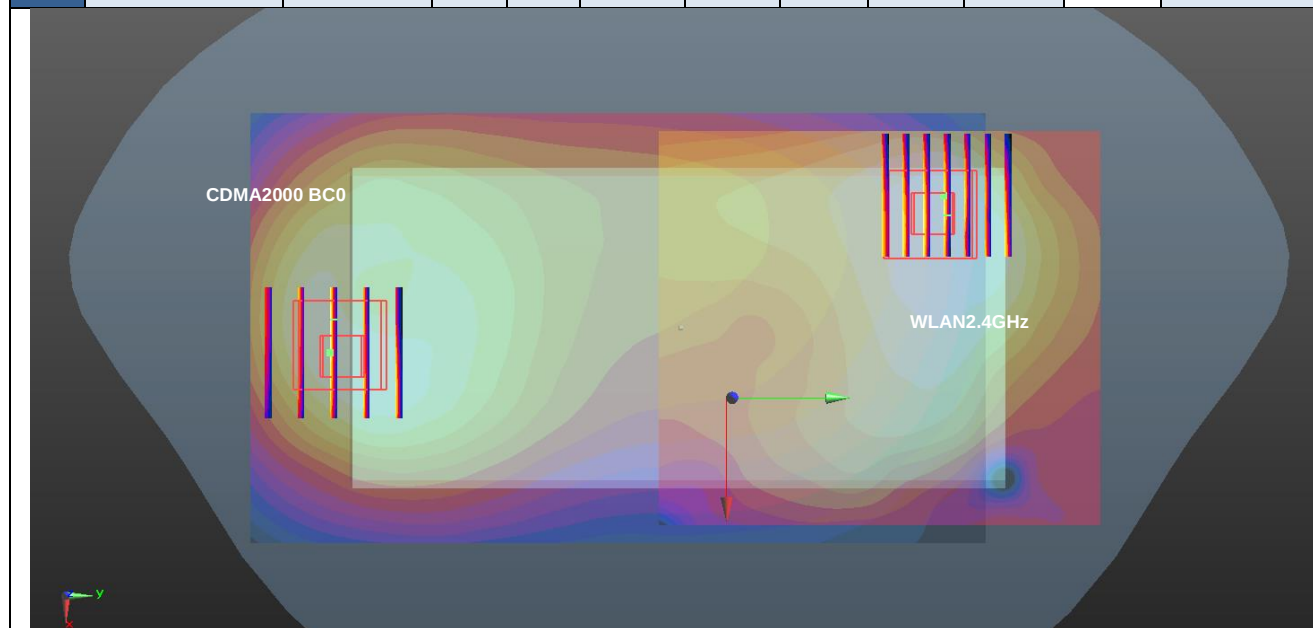
Case #11	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA2000 BC10	Back	1.205	5mm	6	-82.4	-0.98	151.2	1.93	0.02	Not required
	WLAN2.4GHz		0.726	5mm	-29.4	64.6	-1.63				



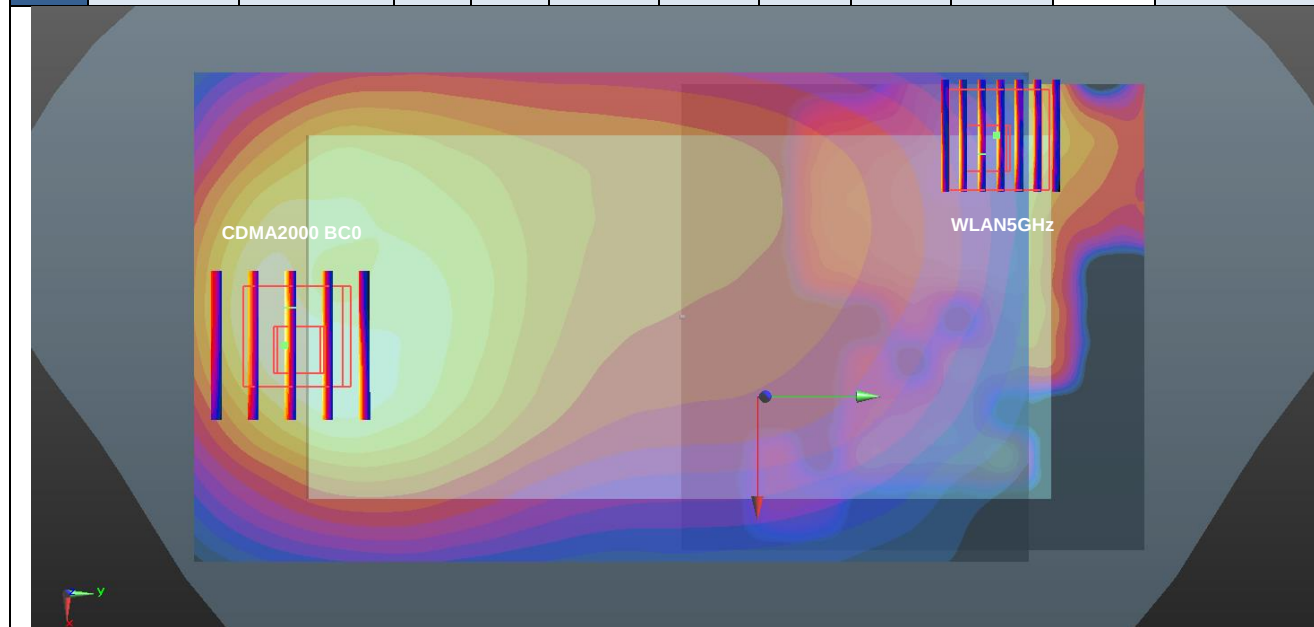
Case #12	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	CDMA2000 BC10		1.205	5mm	X	Y	Z				
	WLAN5GHz		1.160	5mm	-35.8	66.4	-1.7				
		Back			6	-82.4	-0.98	154.6	2.37	0.02	Not required



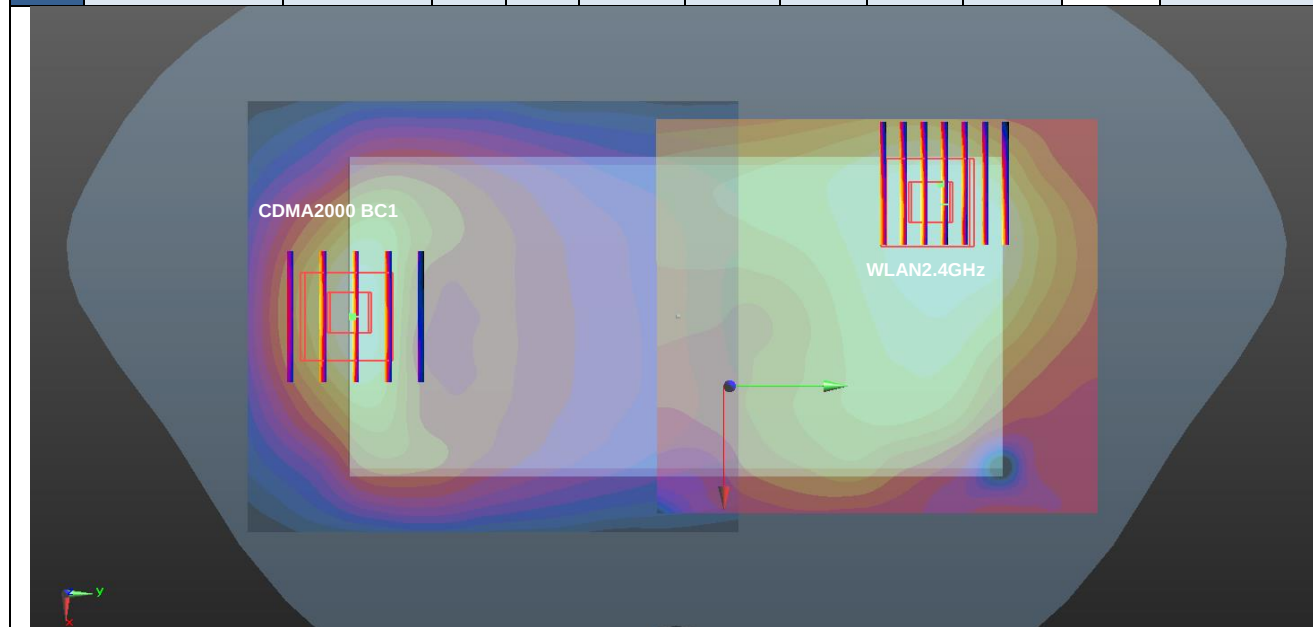
Case #13	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA2000 BC0	Back	1.217	5mm	10.8	-79.1	-0.96	149.2	1.94	0.02	Not required
	WLAN2.4GHz		0.726	5mm	-29.4	64.6	-1.63				



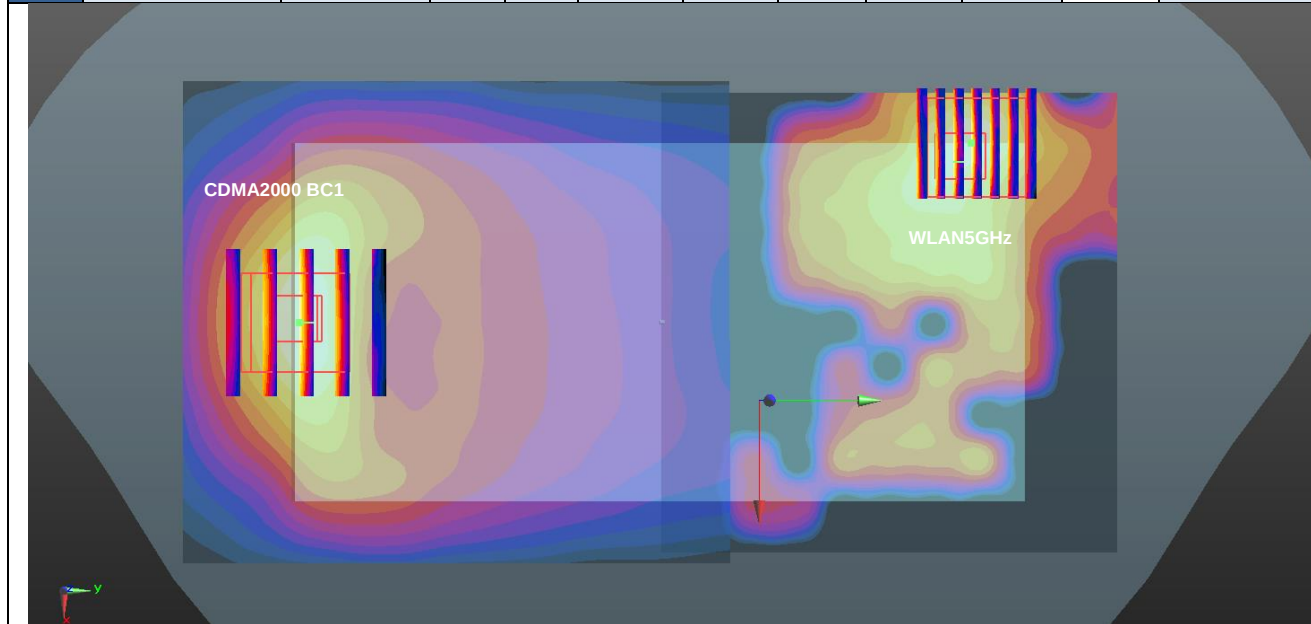
Case #14	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA2000 BC0	Back	1.217	5mm	10.8	-79.1	-0.96	152.8	2.38	0.02	Not required
	WLAN5GHz		1.160	5mm	-35.8	66.4	-1.7				

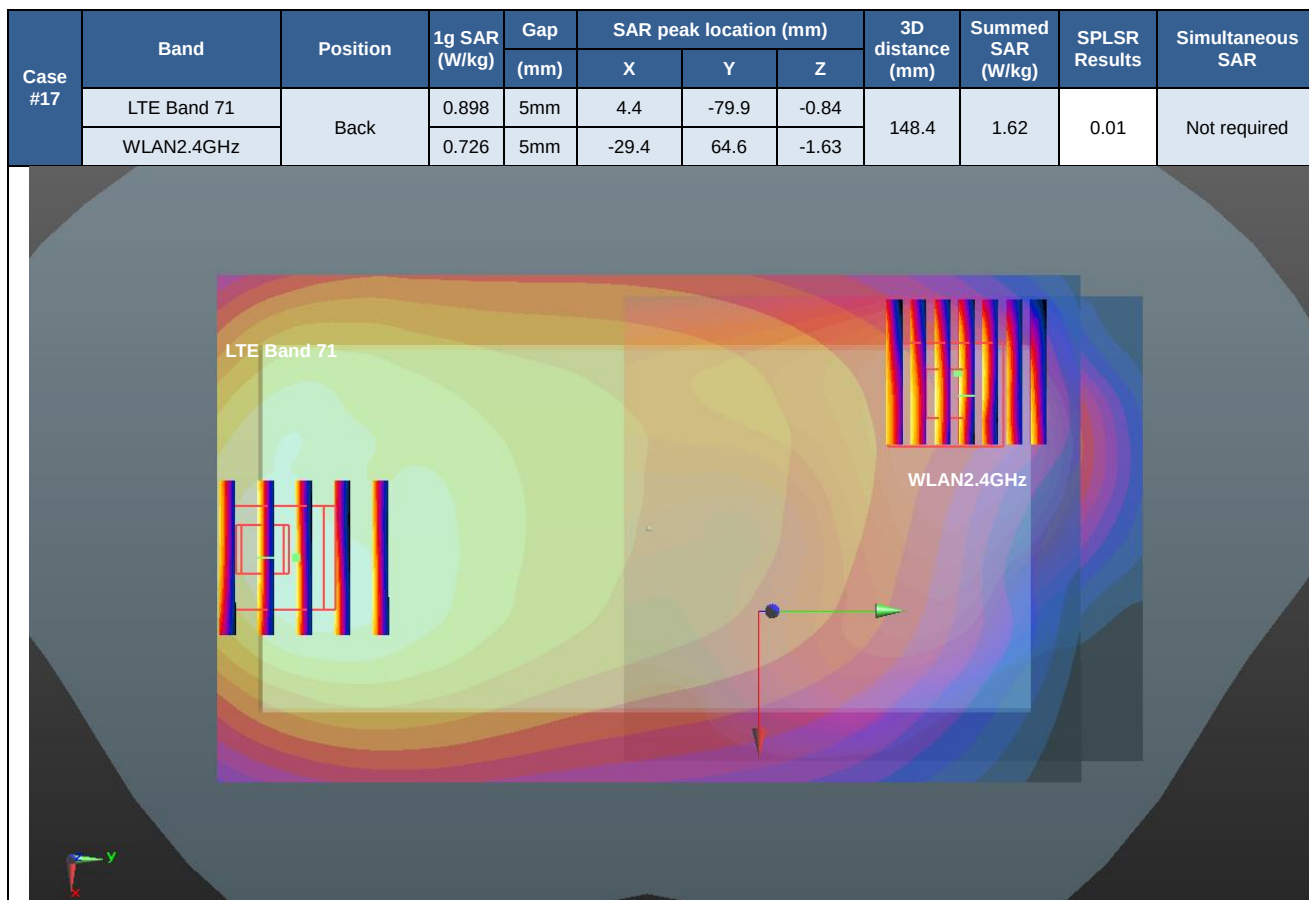


Case #15	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA2000 BC1	Back	1.373	5mm	0	-79.5	-1.43	147.1	2.10	0.02	Not required
	WLAN2.4GHz		0.726	5mm	-29.4	64.6	-1.63				

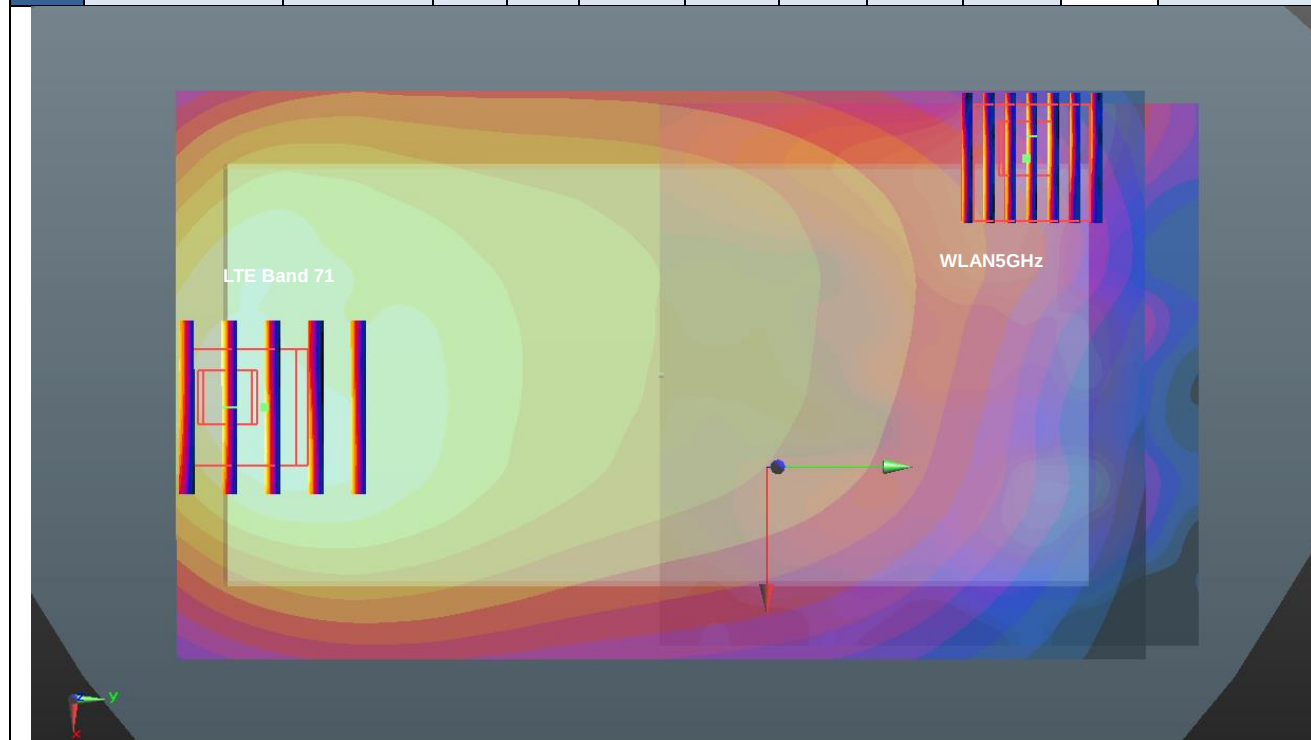


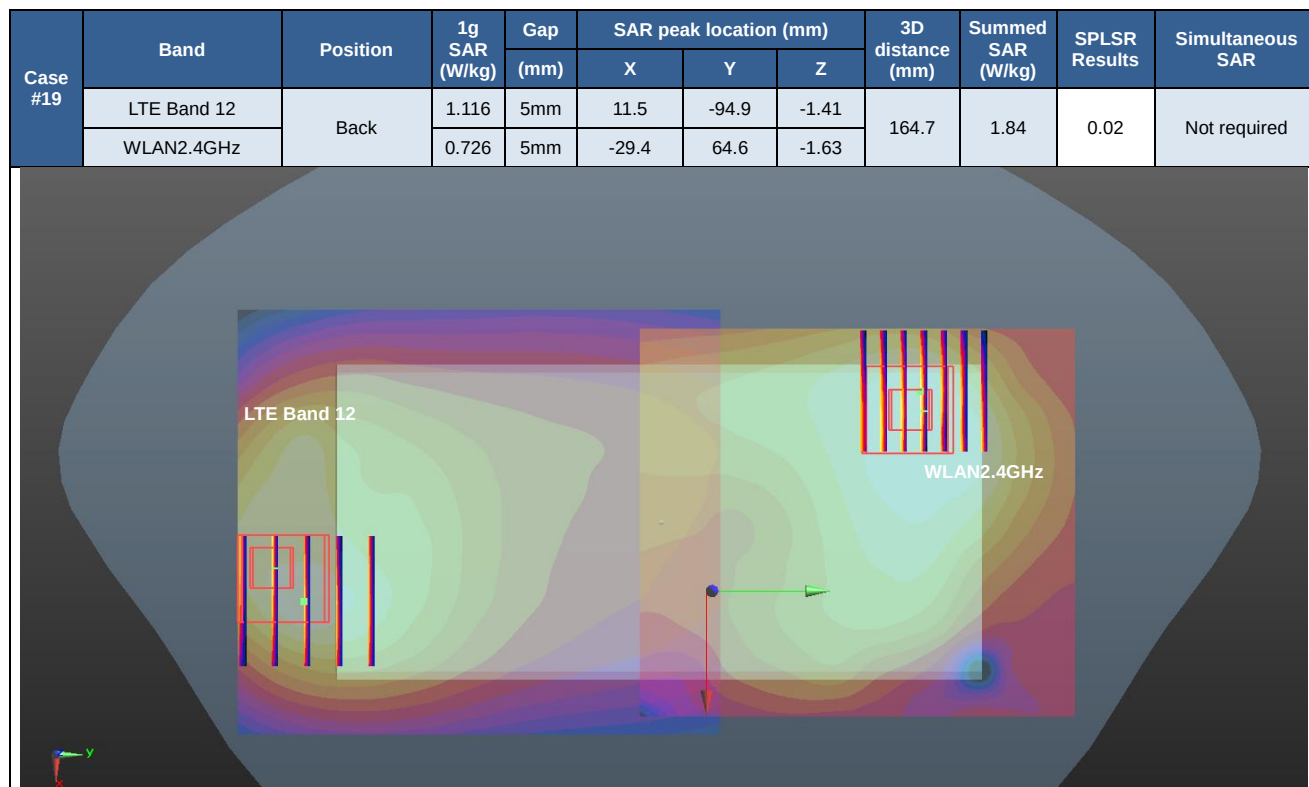
Case #16	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA2000 BC1	Back	1.373	5mm	0	-79.5	-1.43	150.2	2.53	0.03	Not required
	WLAN5GHz		1.160	5mm	-35.8	66.4	-1.7				



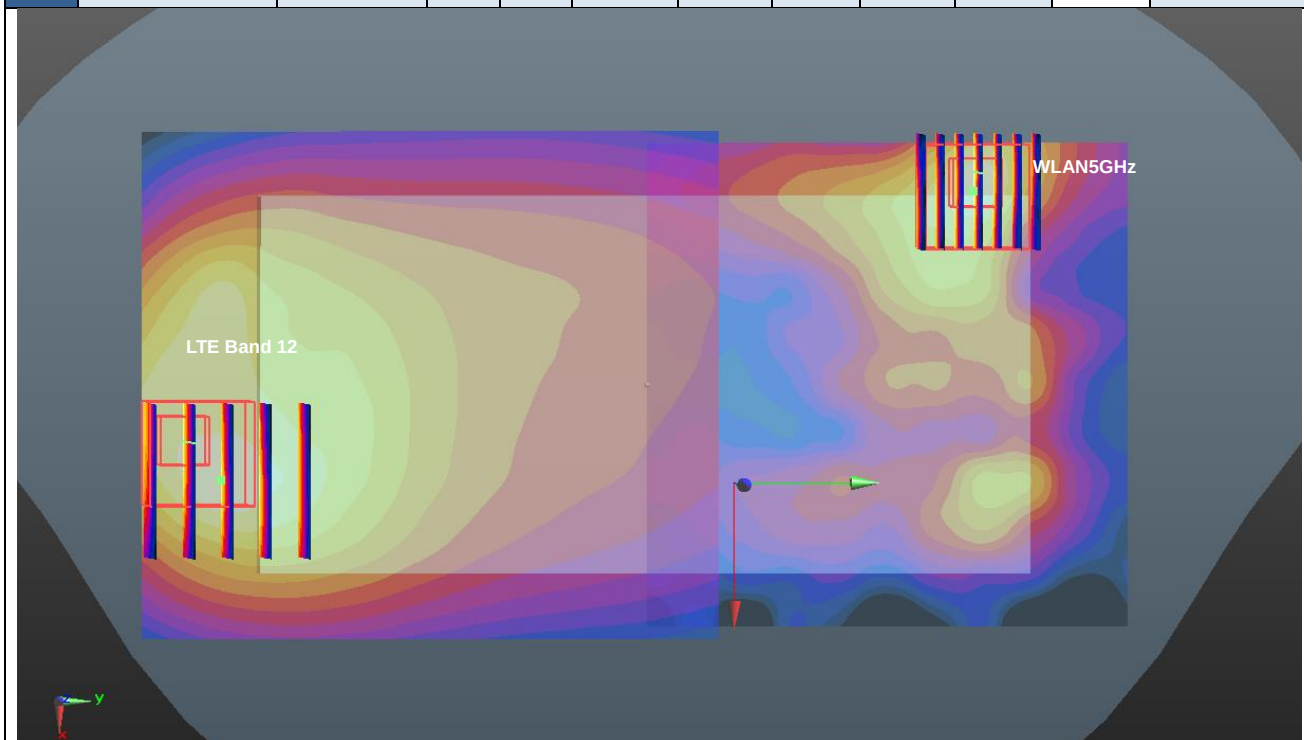


Case #18	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 71	Back	0.898	5mm	4.4	-79.9	-0.84	155.1	2.06	0.02	Not required
	WLAN5GHz		1.160	5mm	-42.4	68	-0.88				

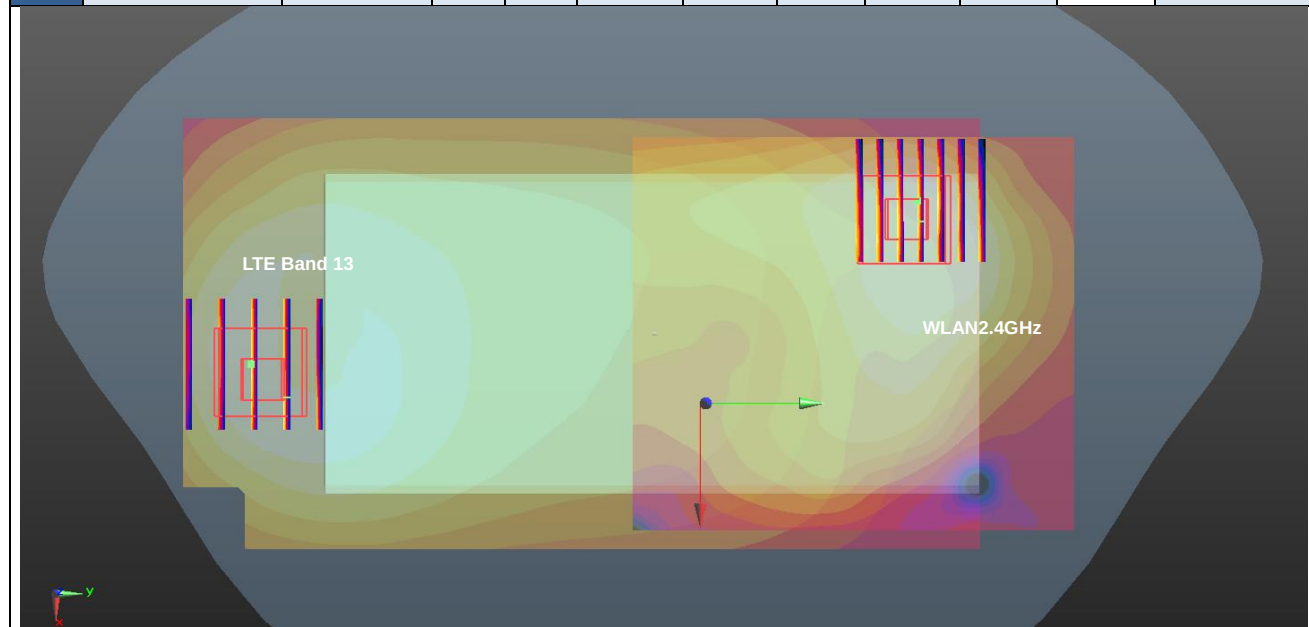




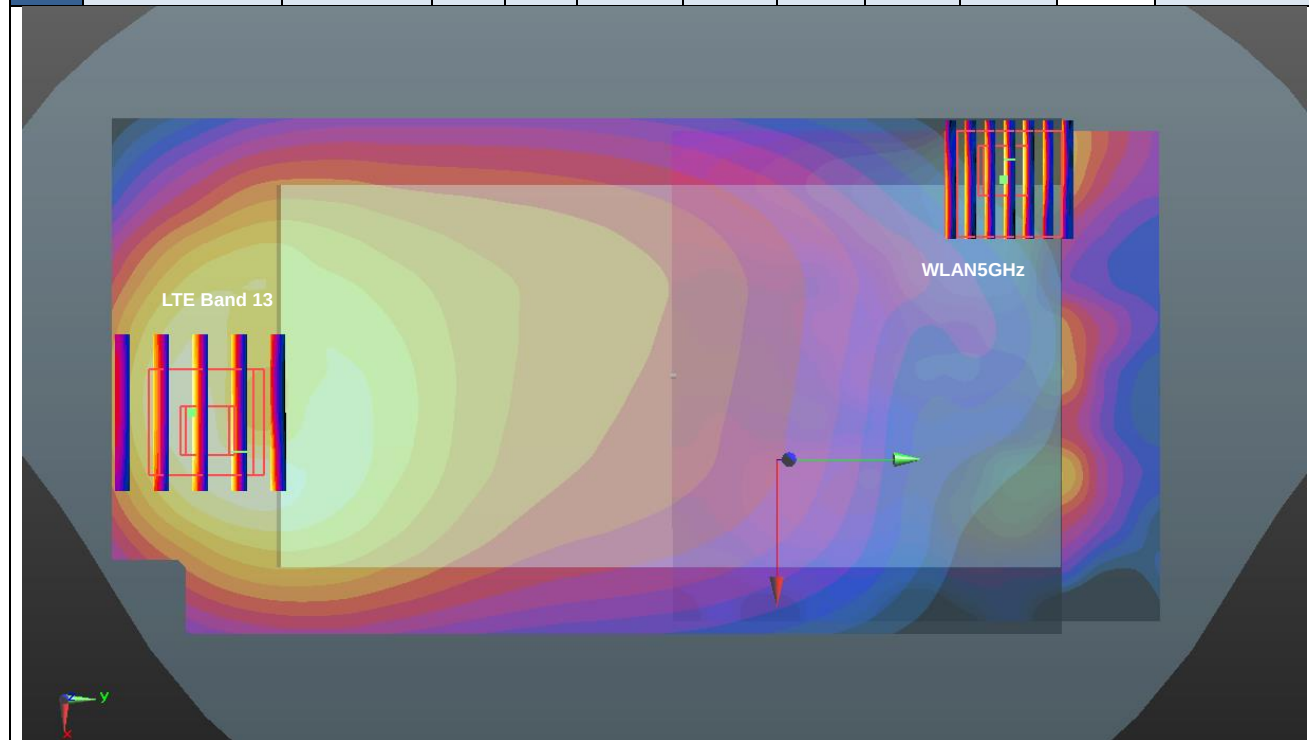
Case #20	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 12	Back	1.116	5mm	11.5	-94.9	-1.41	171.6	2.28	0.02	Not required
	WLAN5GHz		1.160	5mm	-42.4	68	-0.88				



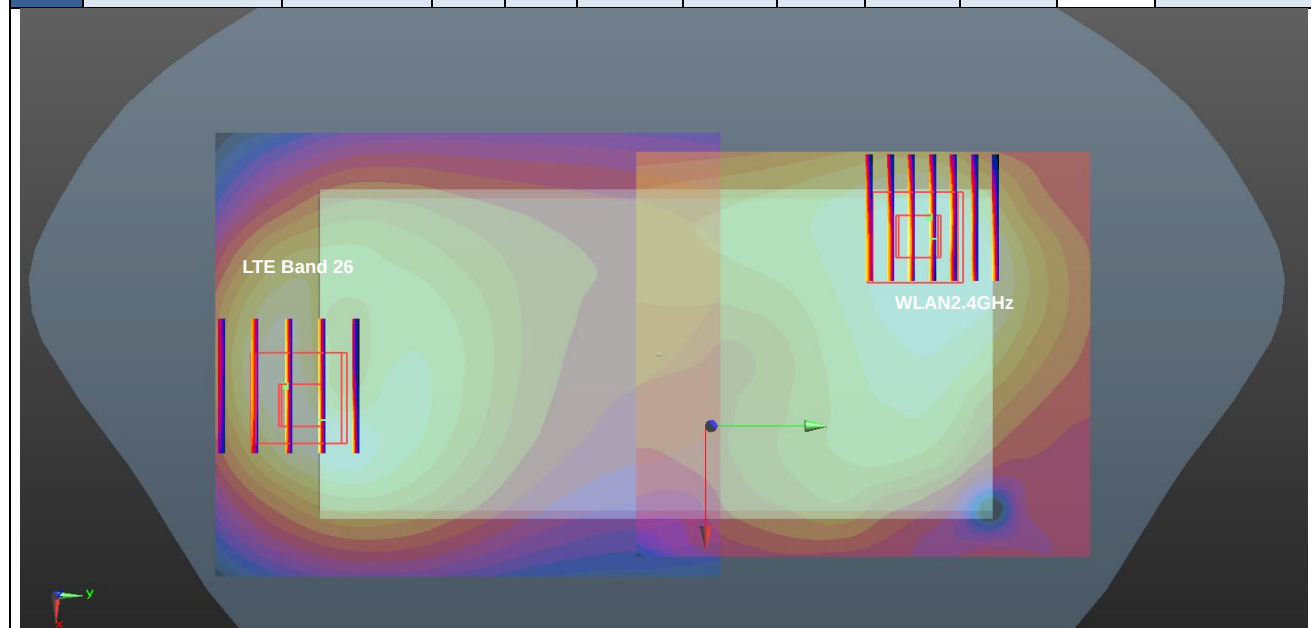
Case #21	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 13	Back	1.242	5mm	13.9	-93.7	-1.44	164.1	1.97	0.02	Not required
	WLAN2.4GHz		0.726	5mm	-29.4	64.6	-1.63				



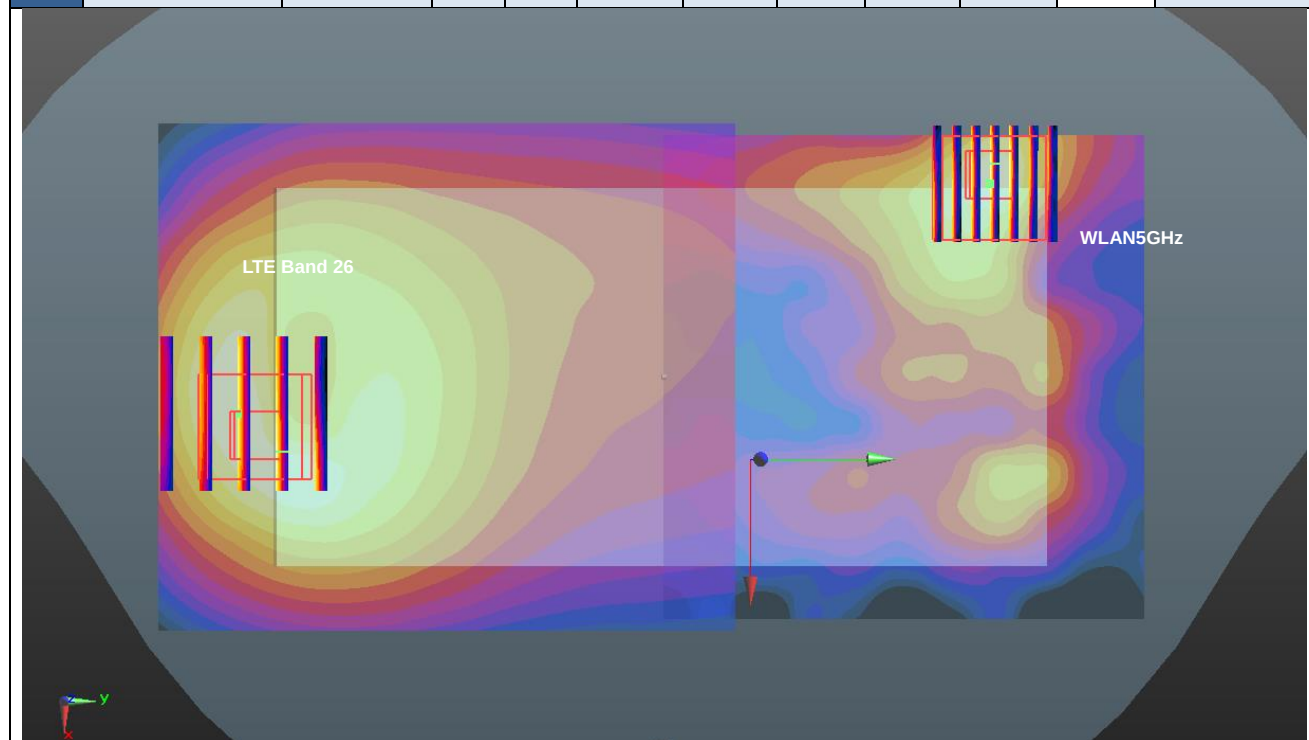
Case #22	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 13	Back	1.242	5mm	13.9	-93.7	-1.44	171.2	2.40	0.02	Not required
	WLAN5GHz		1.160	5mm	-42.4	68	-0.88				



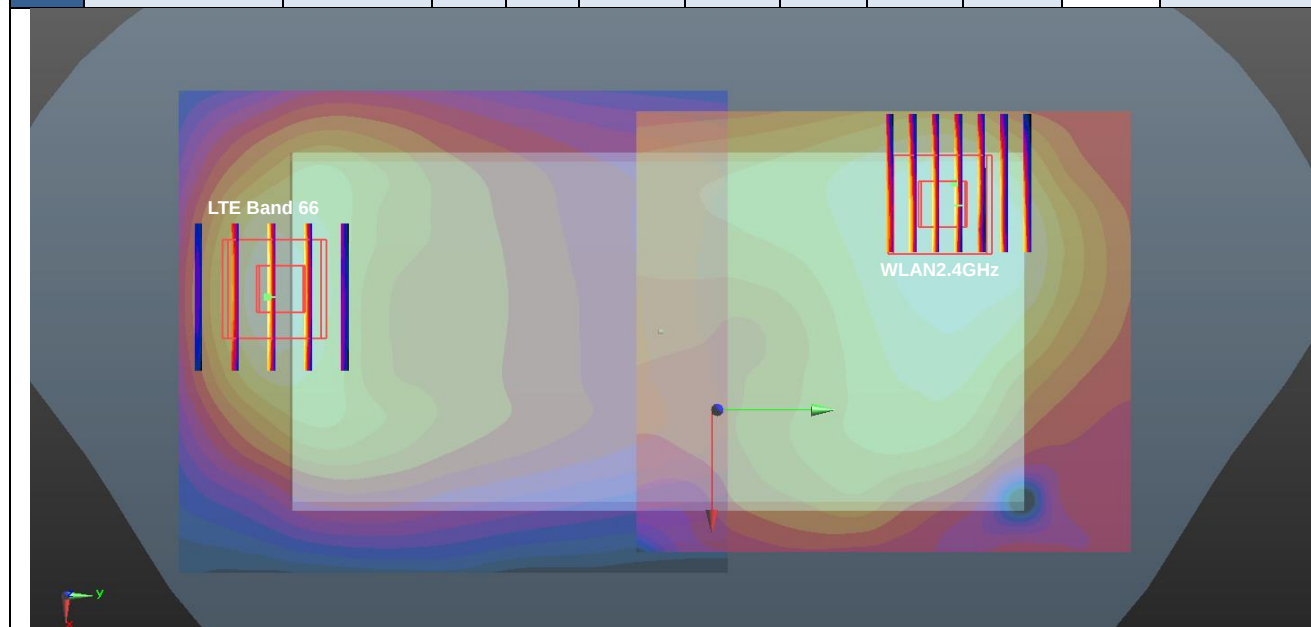
Case #23	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 26	Back	1.383	5mm	13.9	-82.1	-3.72	153.0	2.11	0.02	Not required
	WLAN2.4GHz		0.726	5mm	-29.4	64.6	-1.63				

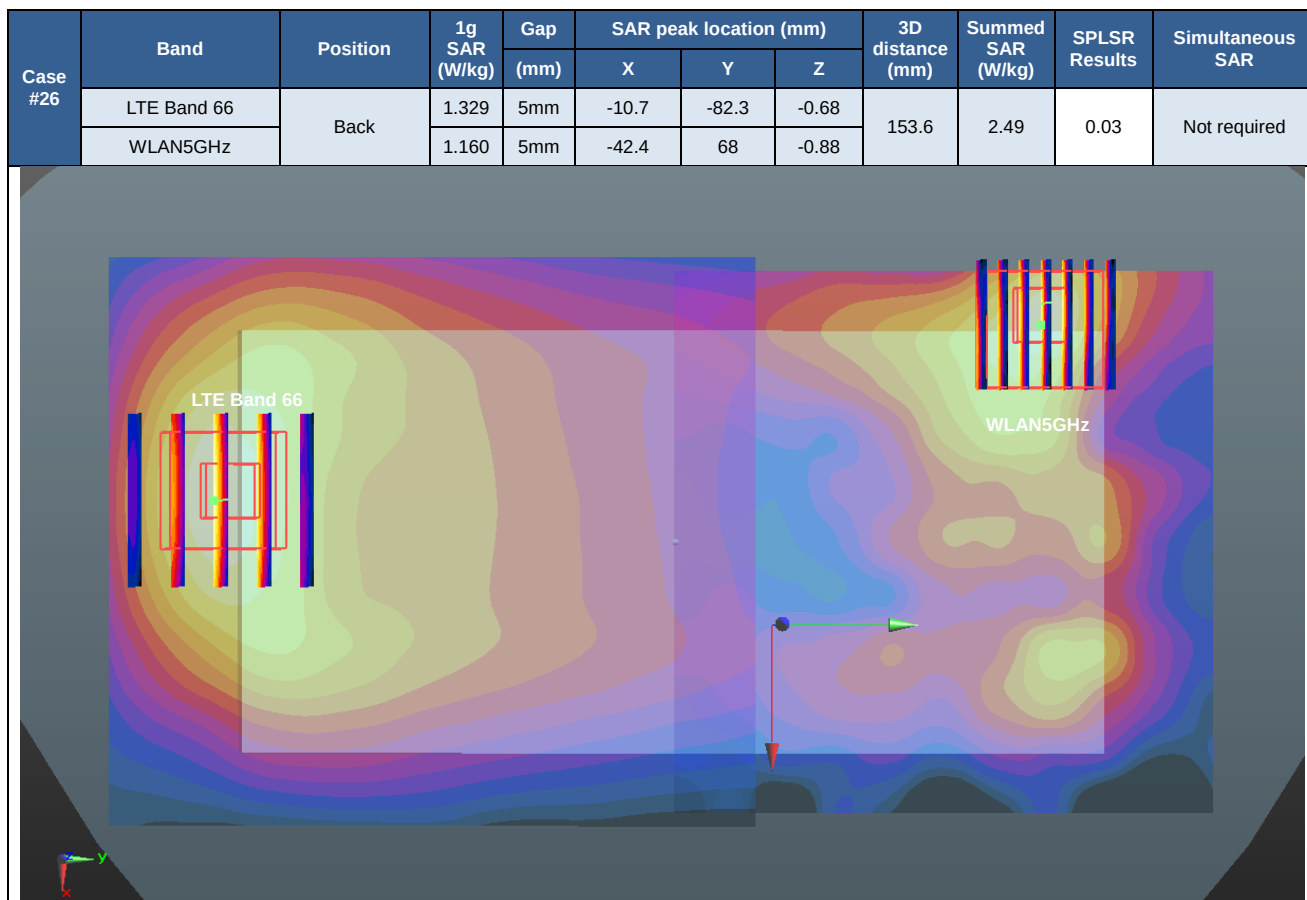


Case #24	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 26	Back	1.383	5mm	13.9	-93.7	-1.44	171.2	2.54	0.02	Not required
	WLAN5GHz		1.160	5mm	-42.4	68	-0.88				

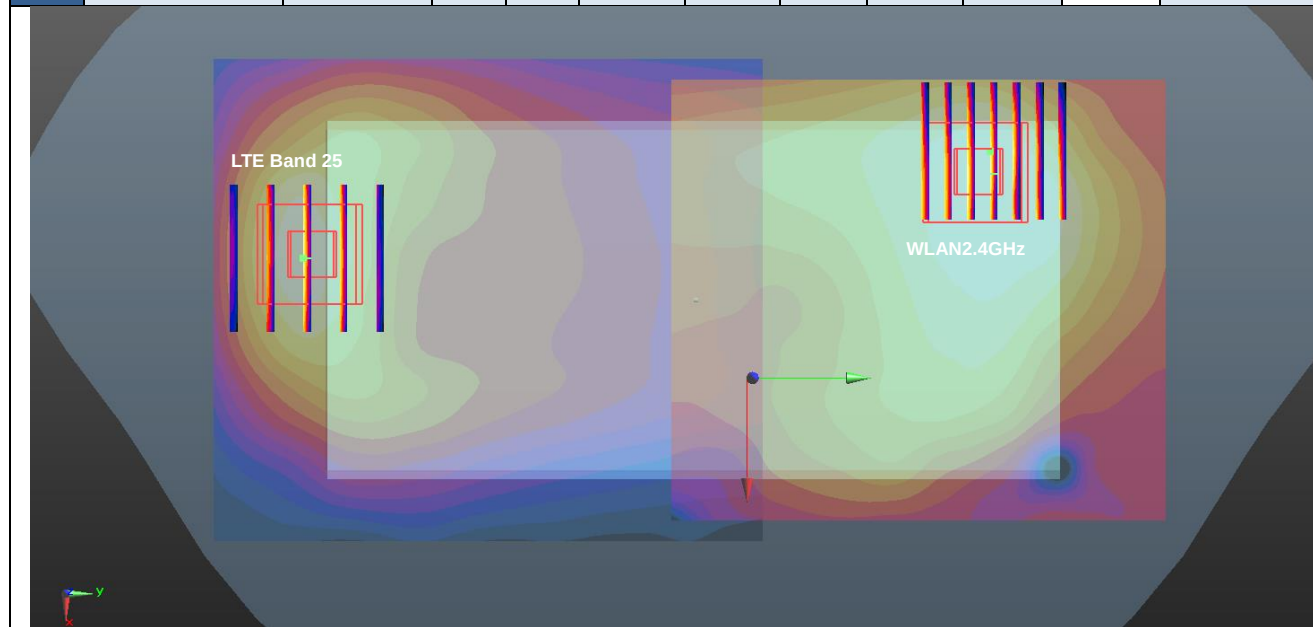


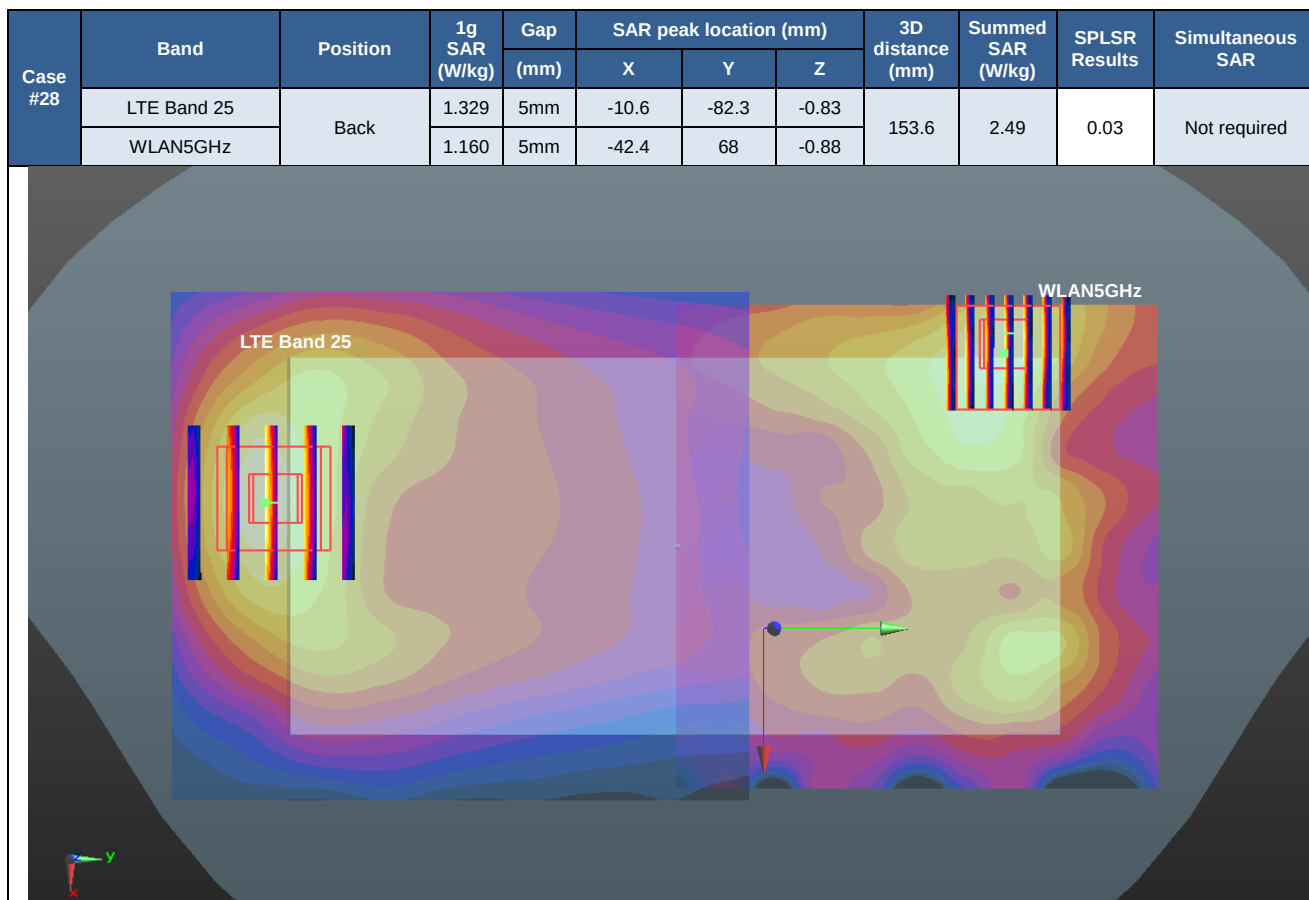
Case #25	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 66	Back	1.329	5mm	-10.7	-82.3	-0.68	148.1	2.06	0.02	Not required
	WLAN2.4GHz		0.726	5mm	-29.4	64.6	-1.63				



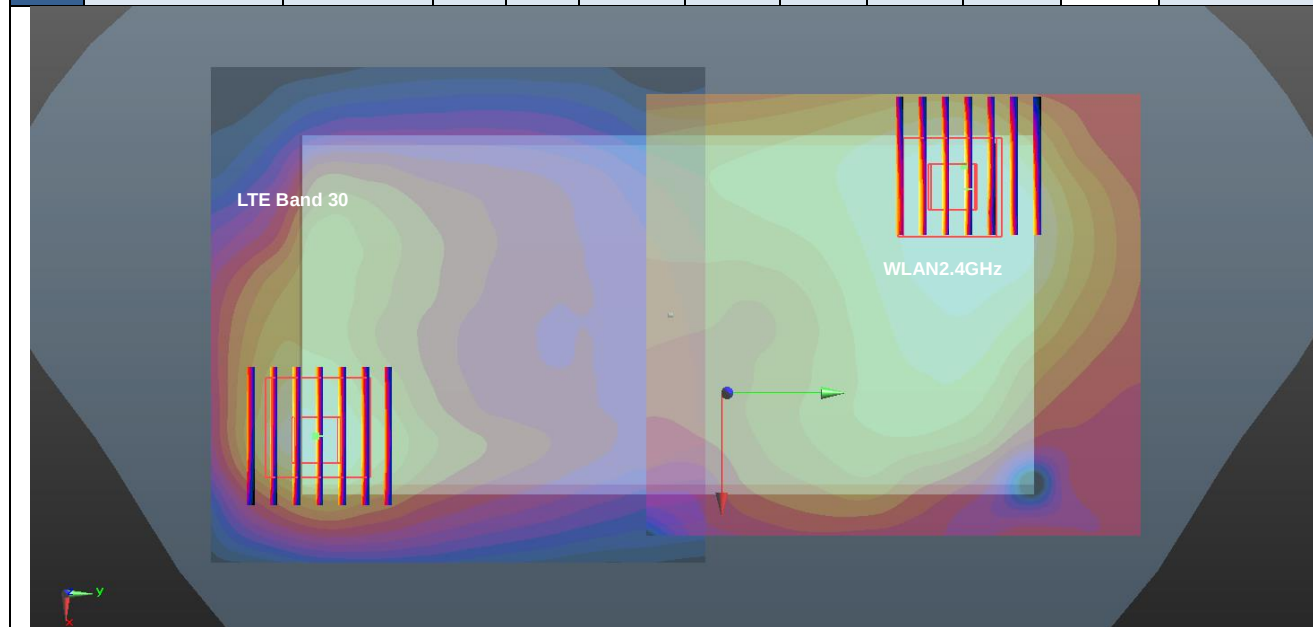


Case #27	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 25	Back	1.329	5mm	-10.6	-82.3	-0.83	148.1	2.06	0.02	Not required
	WLAN2.4GHz		0.726	5mm	-29.4	64.6	-1.63				

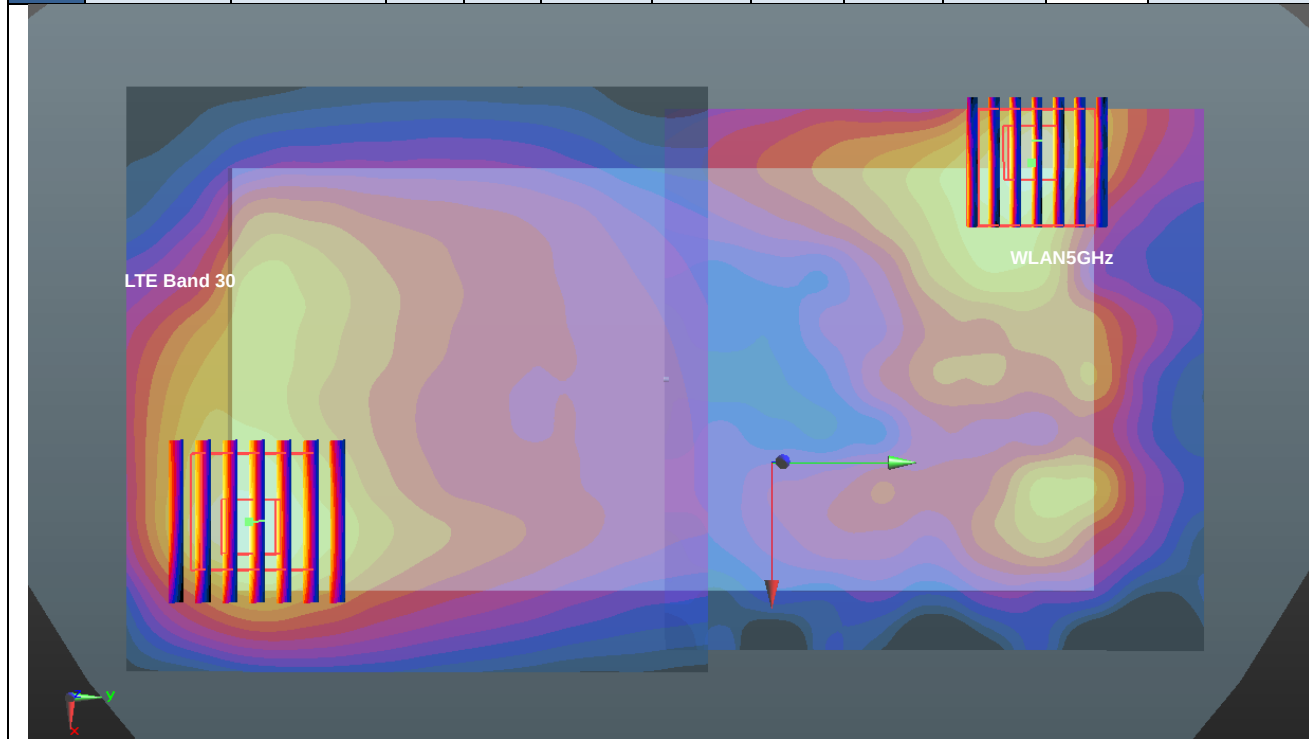




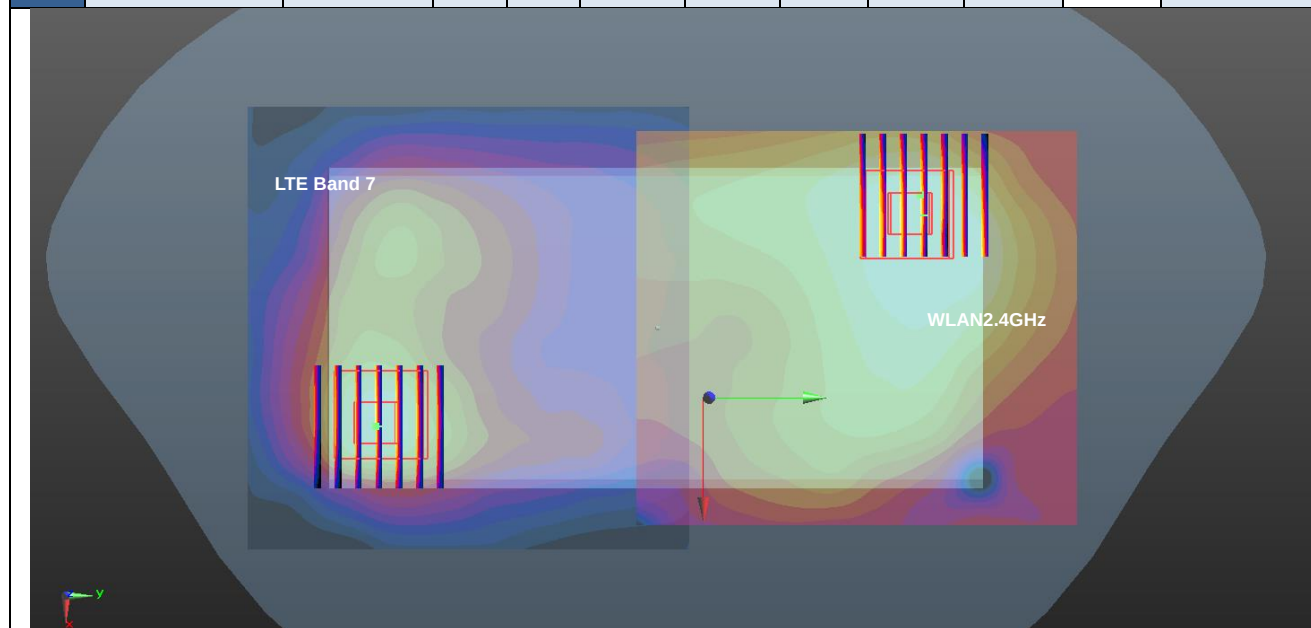
Case #29	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 30	Back	1.098	5mm	28.4	-77.2	-1.2	153.1	1.82	0.02	Not required
	WLAN2.4GHz		0.726	5mm	-29.4	64.6	-1.63				



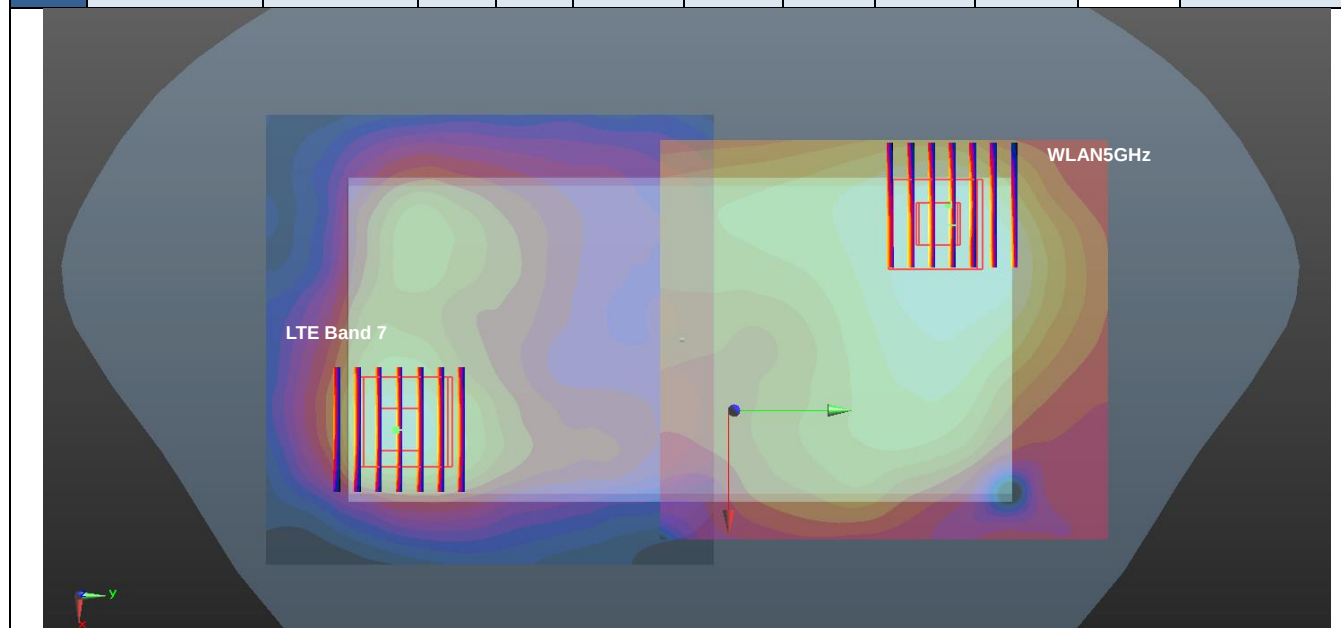
Case #30	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 30	Back	1.098	5mm	28.4	-77.2	-1.2	161.5	2.26	0.02	Not required
	WLAN5GHz		1.160	5mm	-42.4	68	-0.88				



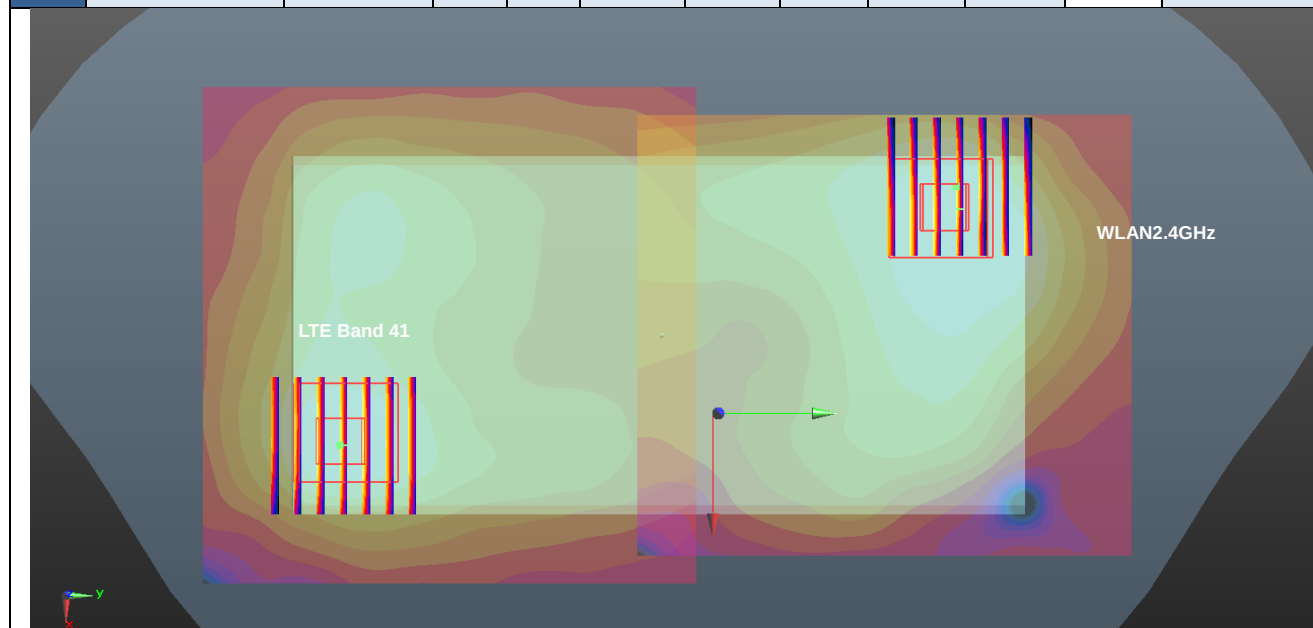
Case #31	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 7	Back	1.291	5mm	-23	-69.8	-0.66	134.6	2.02	0.02	Not required
	WLAN2.4GHz		0.726	5mm	-29.4	64.6	-1.63				

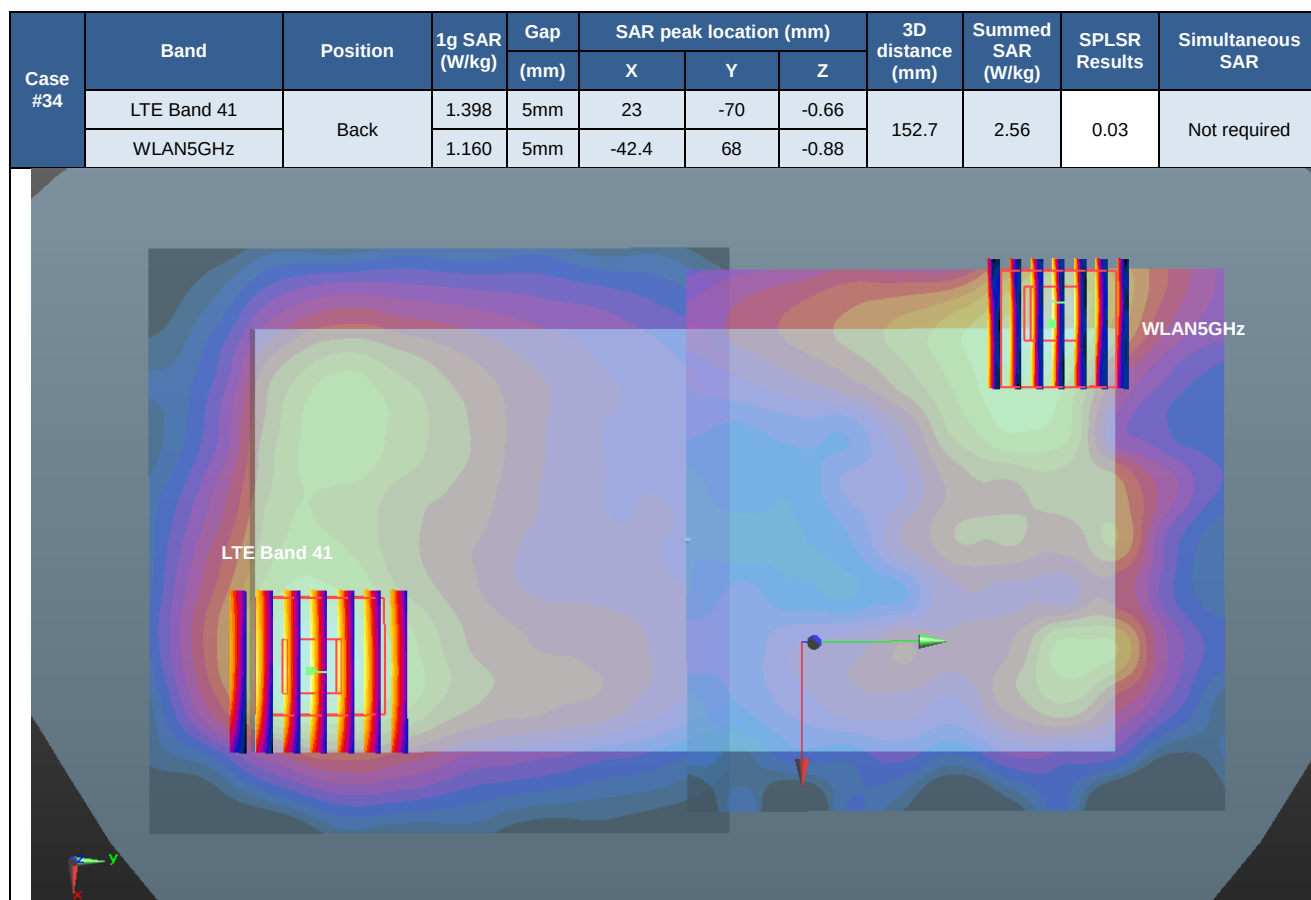


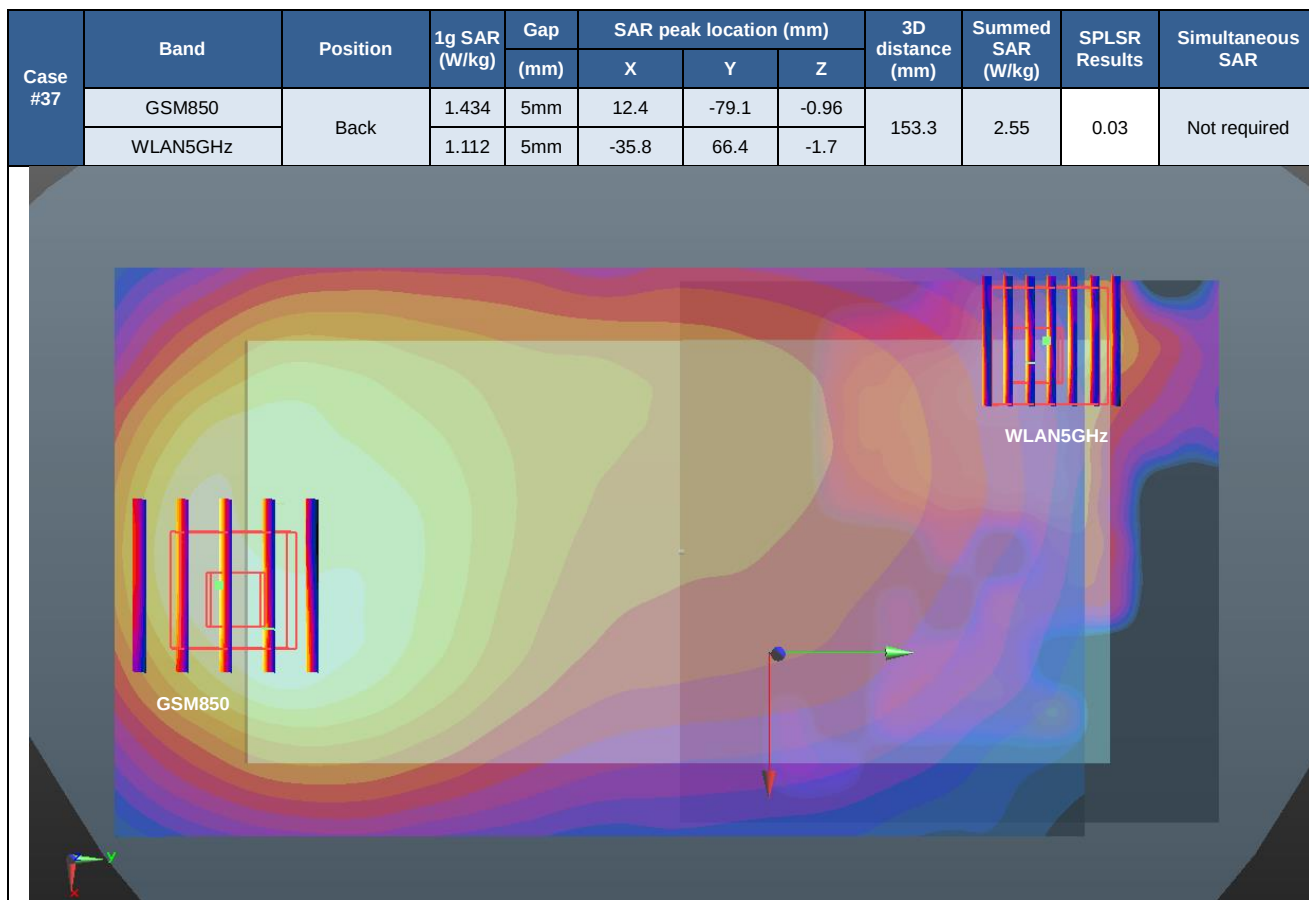
Case #32	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 7	Back	1.291	5mm	-23	-69.8	-0.66	139.2	2.45	0.03	Not required
	WLAN5GHz		1.160	5mm	-42.4	68	-0.88				

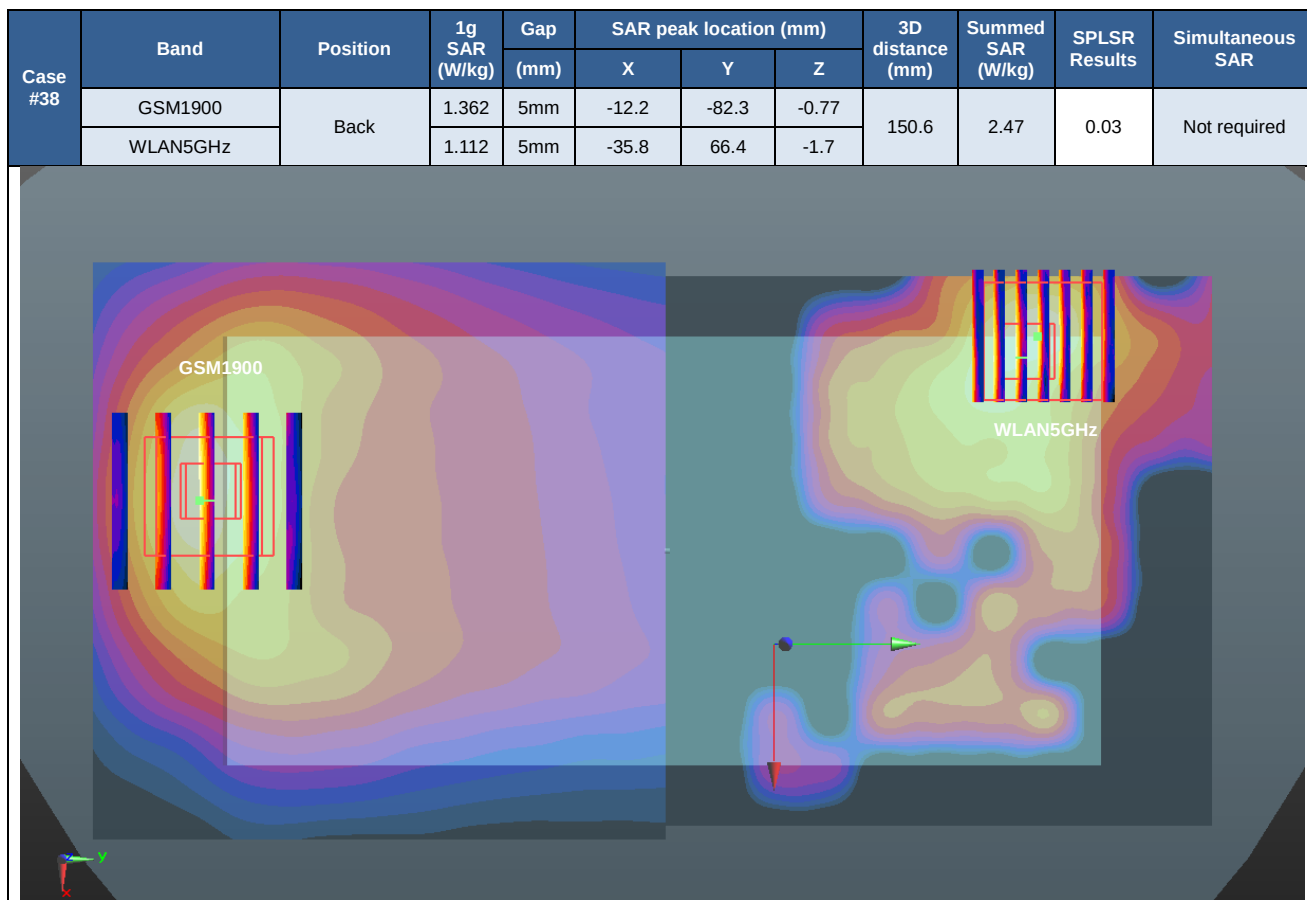


Case #33	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 41	Back	1.398	5mm	23	-70	-0.66	144.4	2.12	0.02	Not required
	WLAN2.4GHz		0.726	5mm	-29.4	64.6	-1.63				

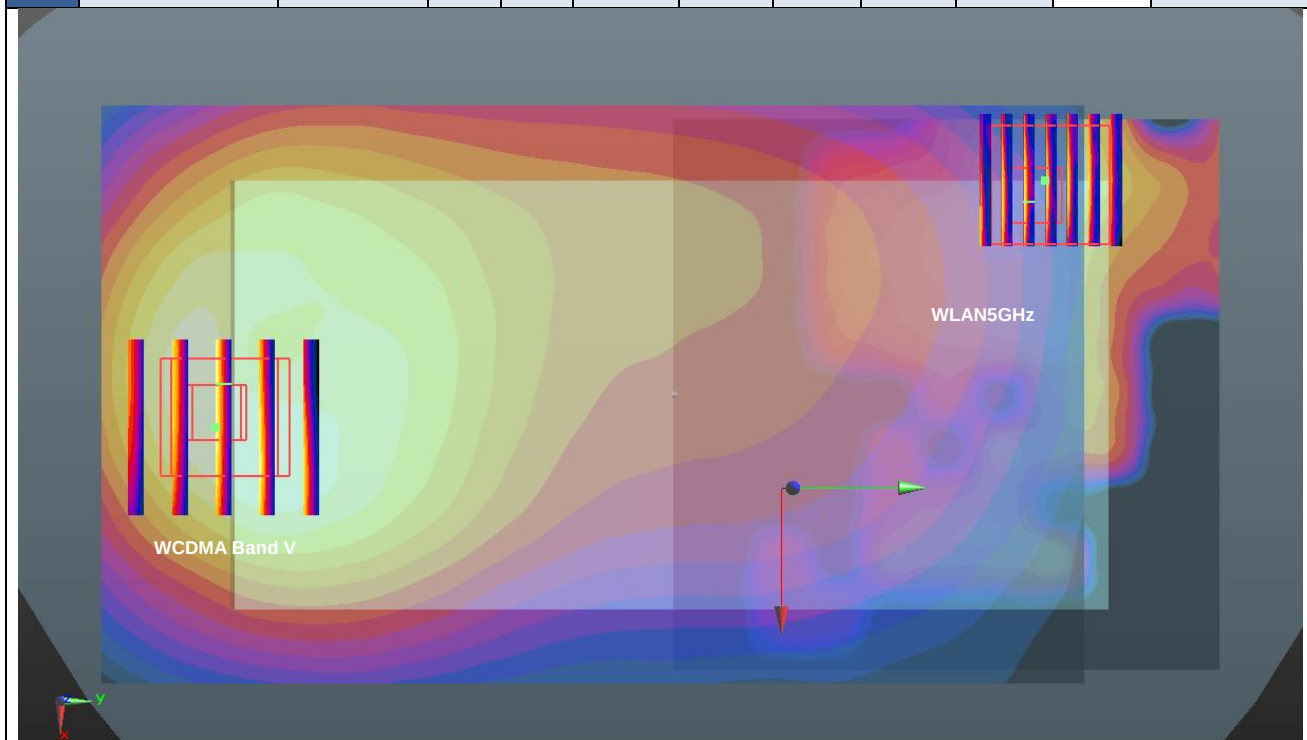


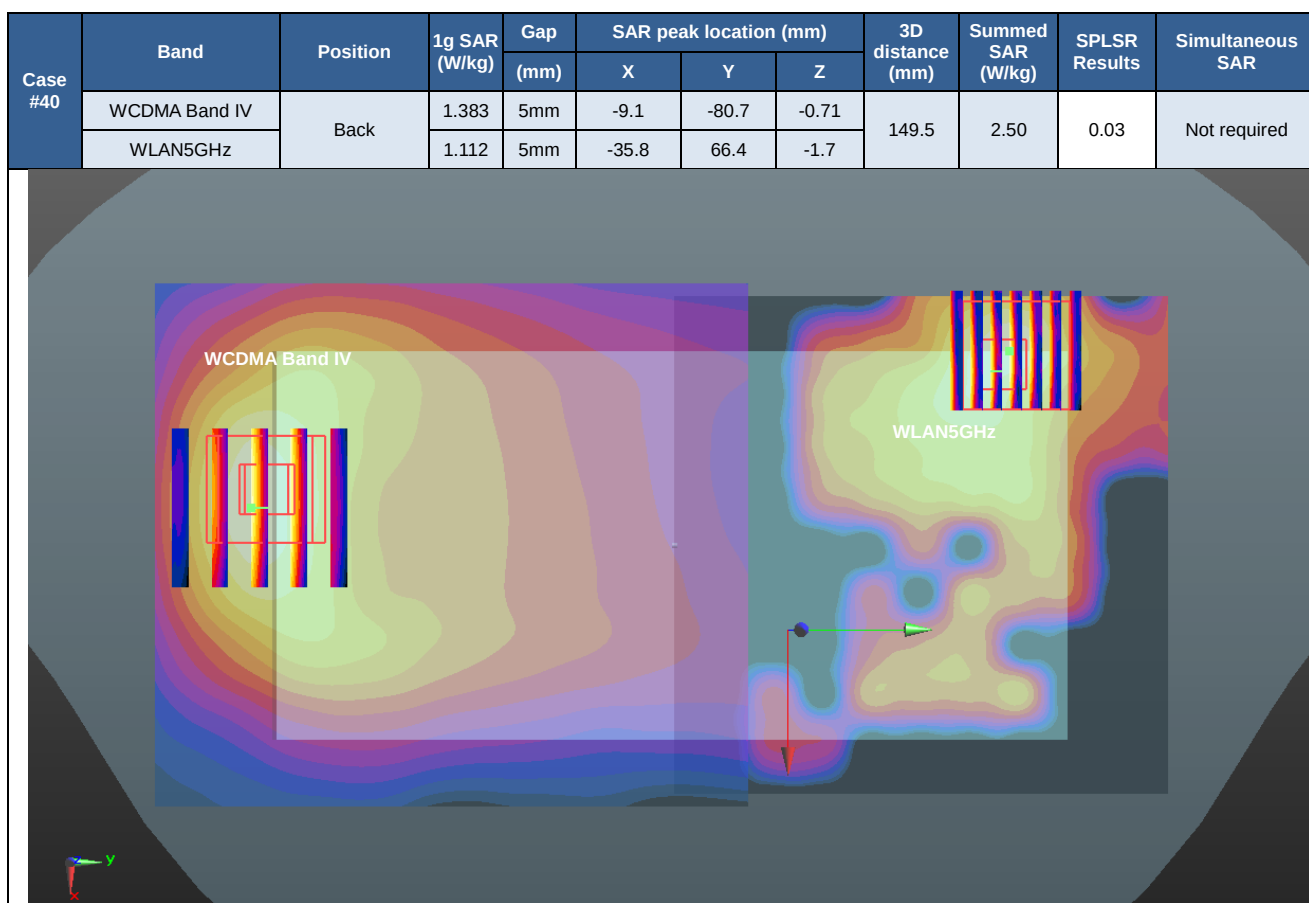


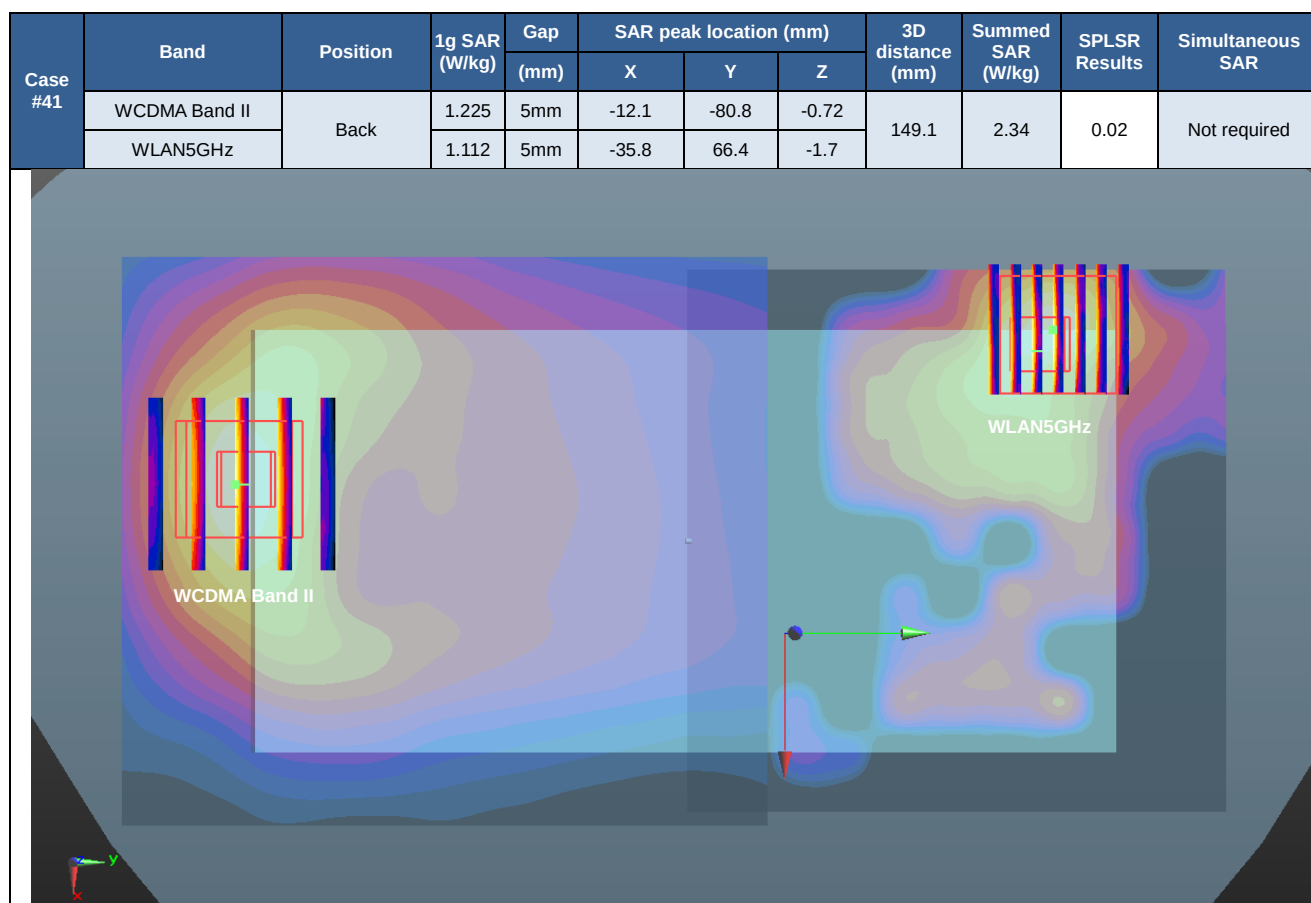




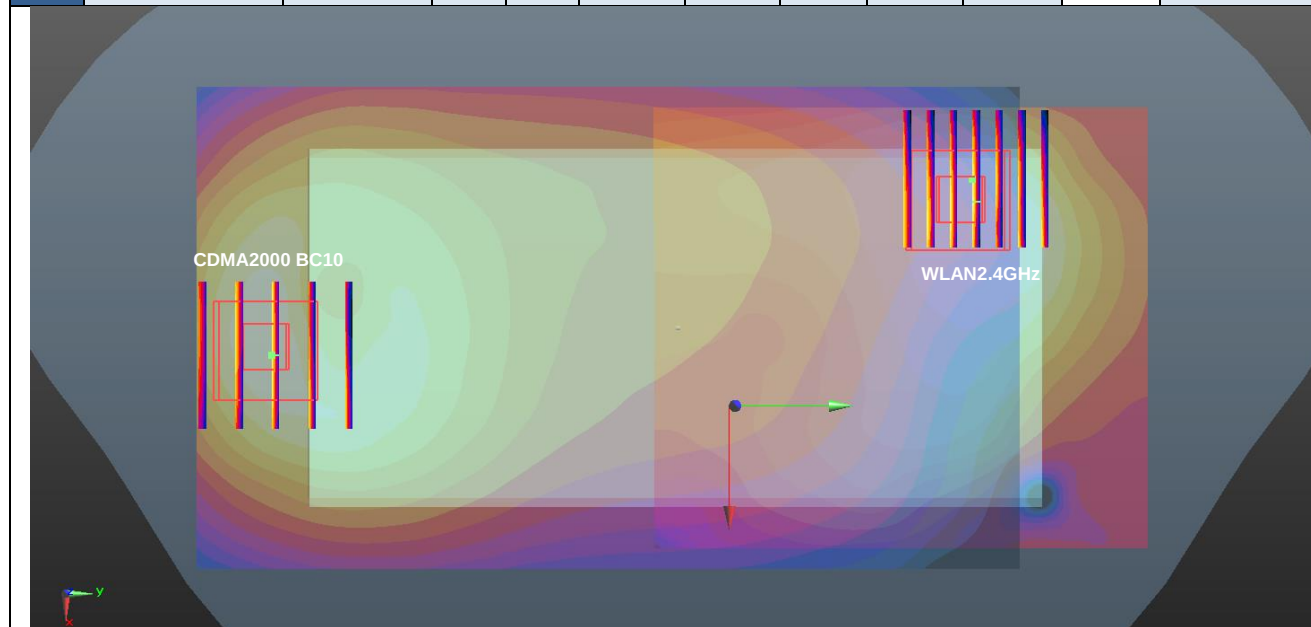
Case #39	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA Band V	Back	1.399	5mm	6	-82.4	-1	154.6	2.51	0.03	Not required
	WLAN5GHz		1.112	5mm	-35.8	66.4	-1.7				



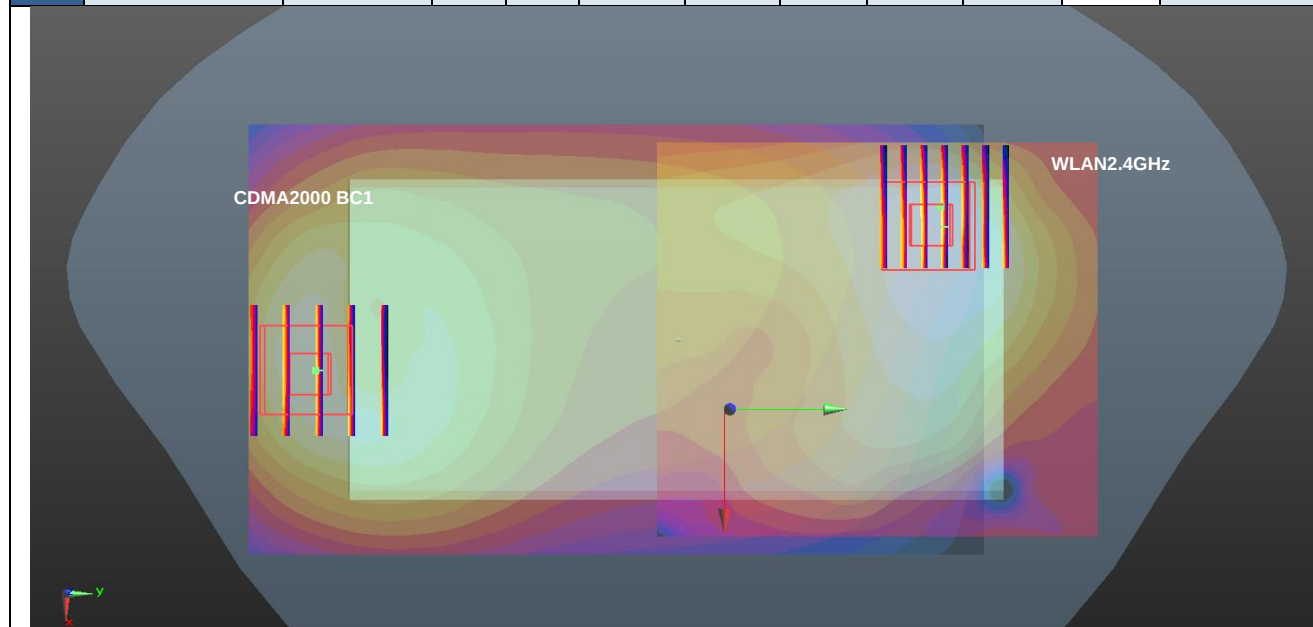


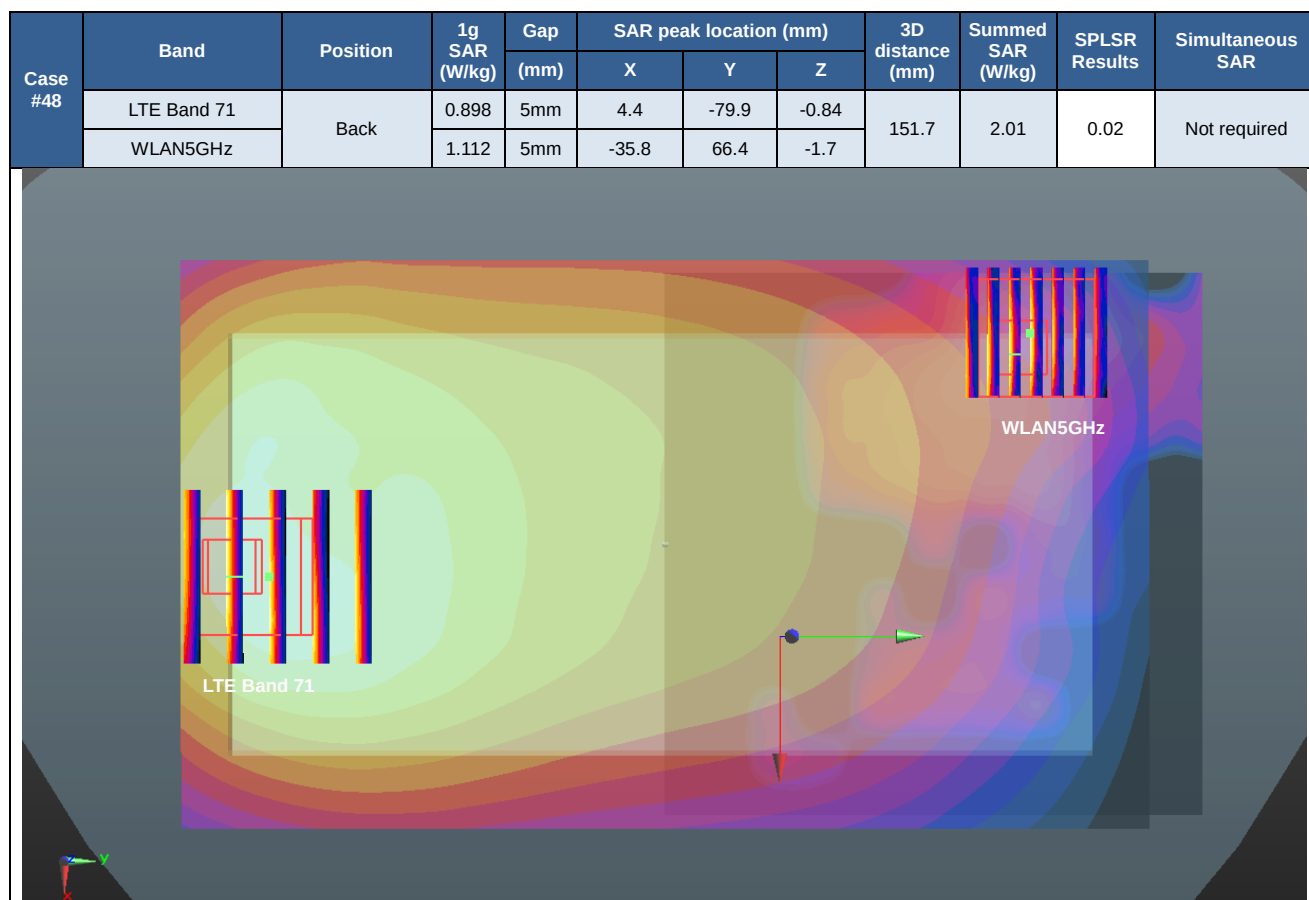


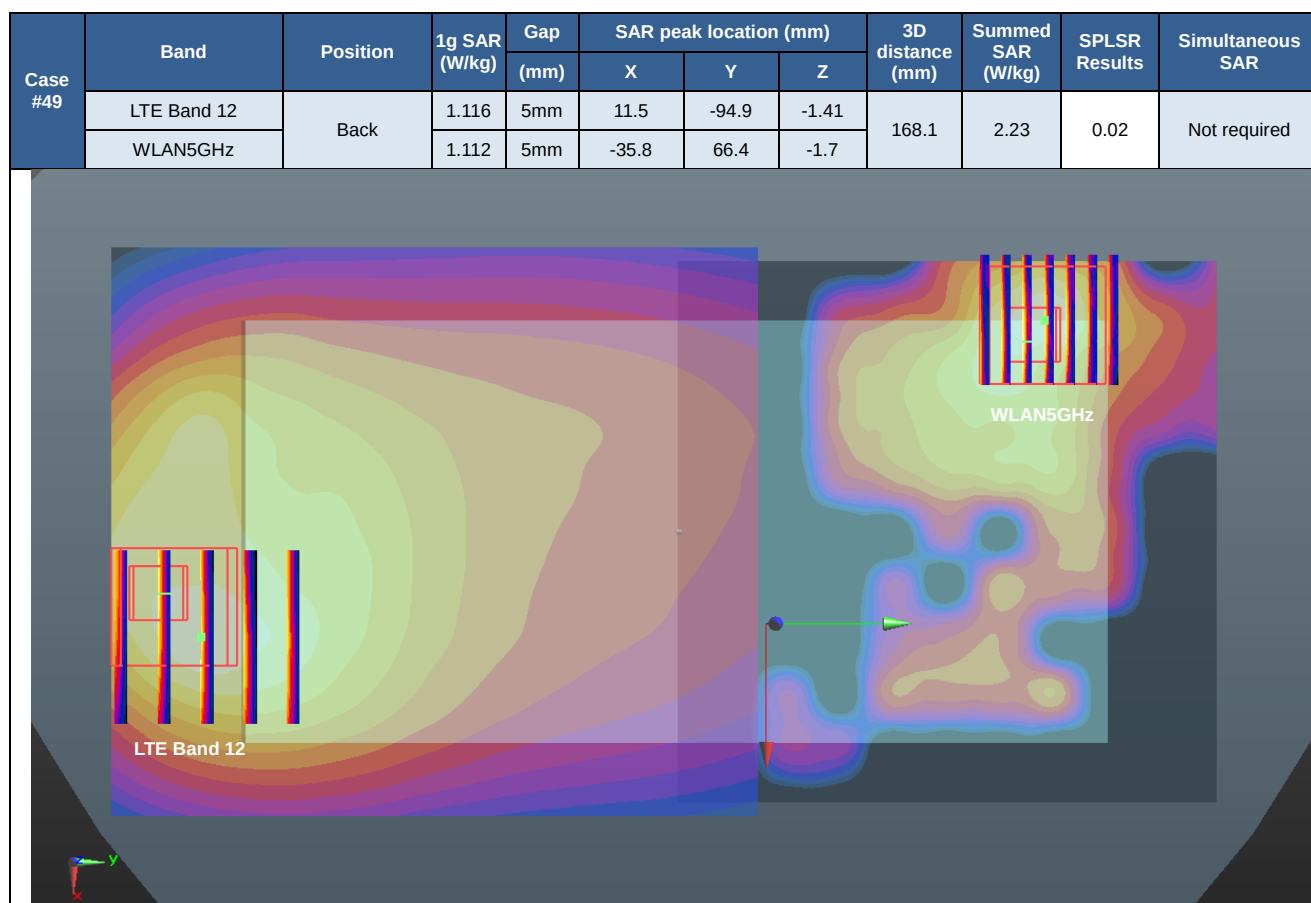
Case #42	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA2000 BC10	Back	1.127	5mm	6	-88.5	-1.46	157.1	1.85	0.02	Not required
	WLAN2.4GHz		0.726	5mm	-29.4	64.6	-1.63				

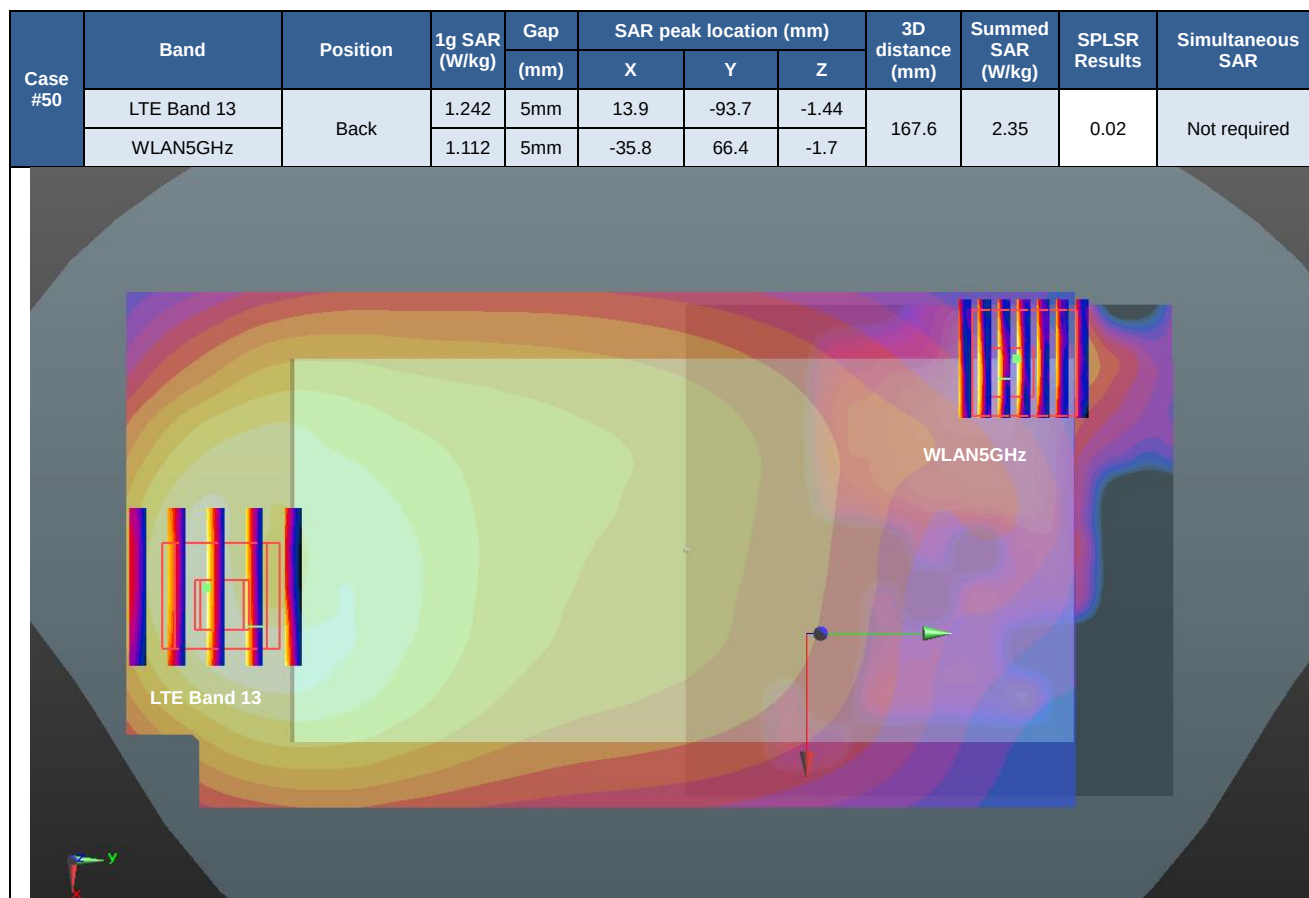


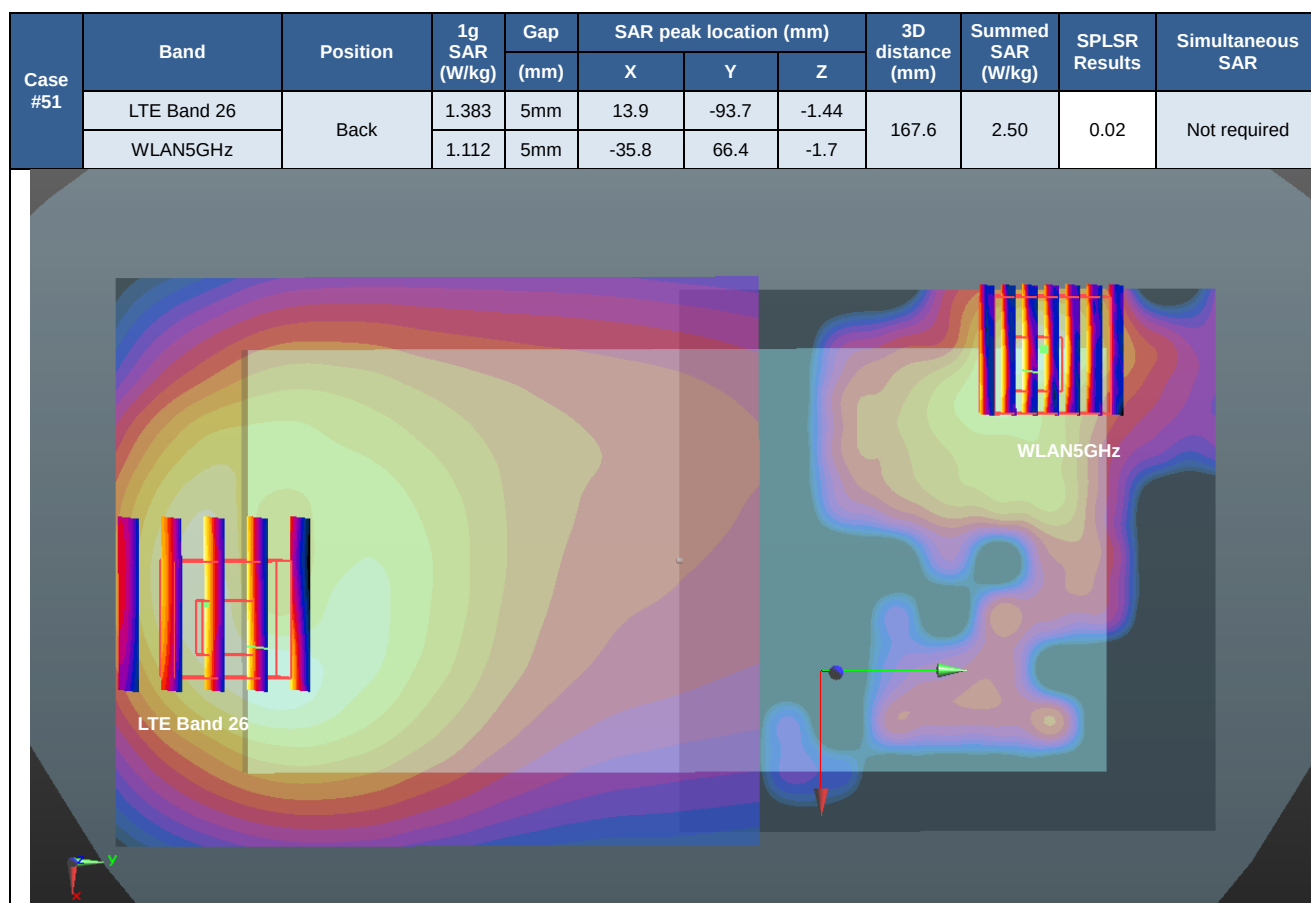
Case #43	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA2000 BC1	Back	1.361	5mm	7.5	-90.1	-1.49	159.0	2.09	0.02	Not required
	WLAN2.4GHz		0.726	5mm	-29.4	64.6	-1.63				

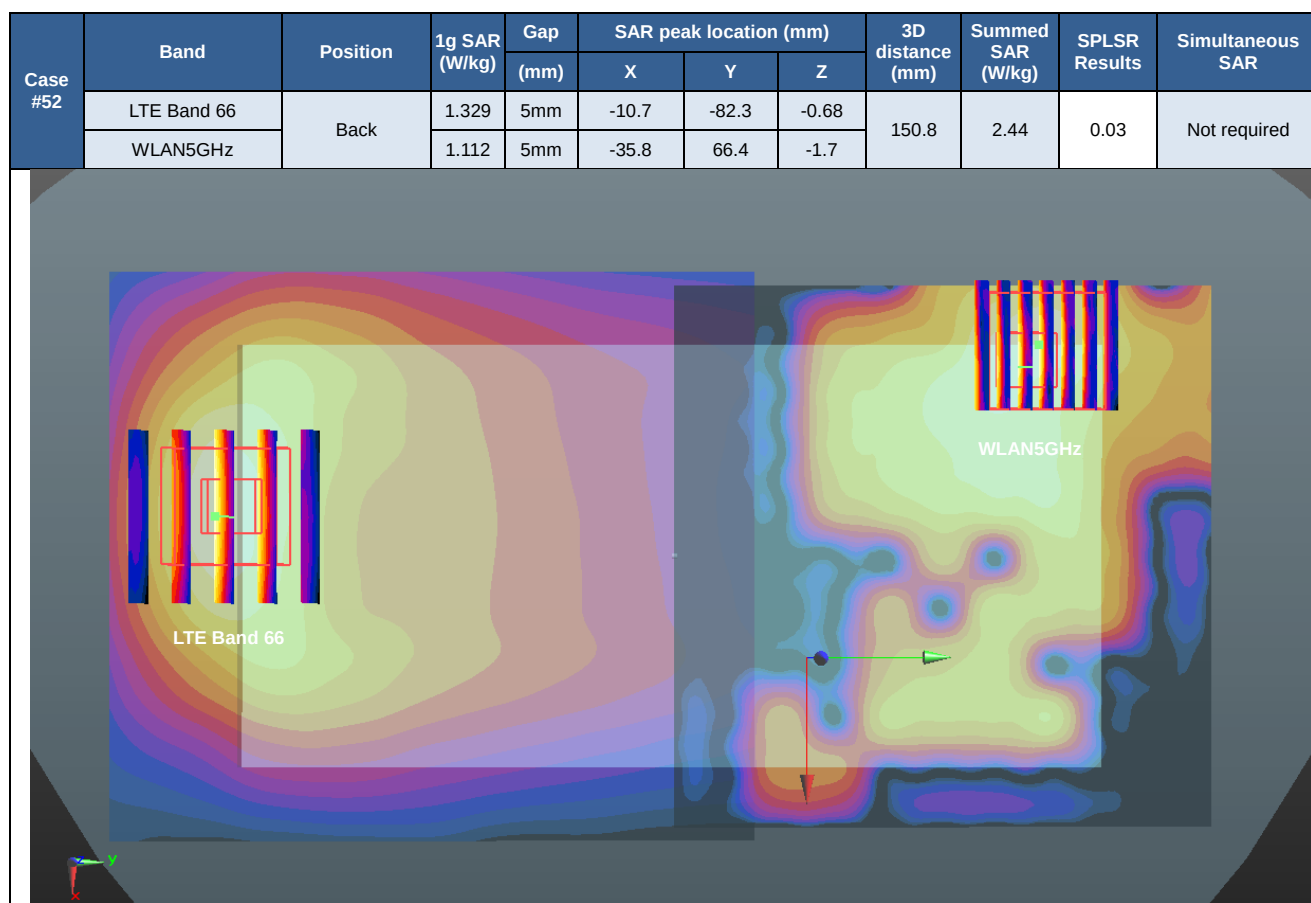


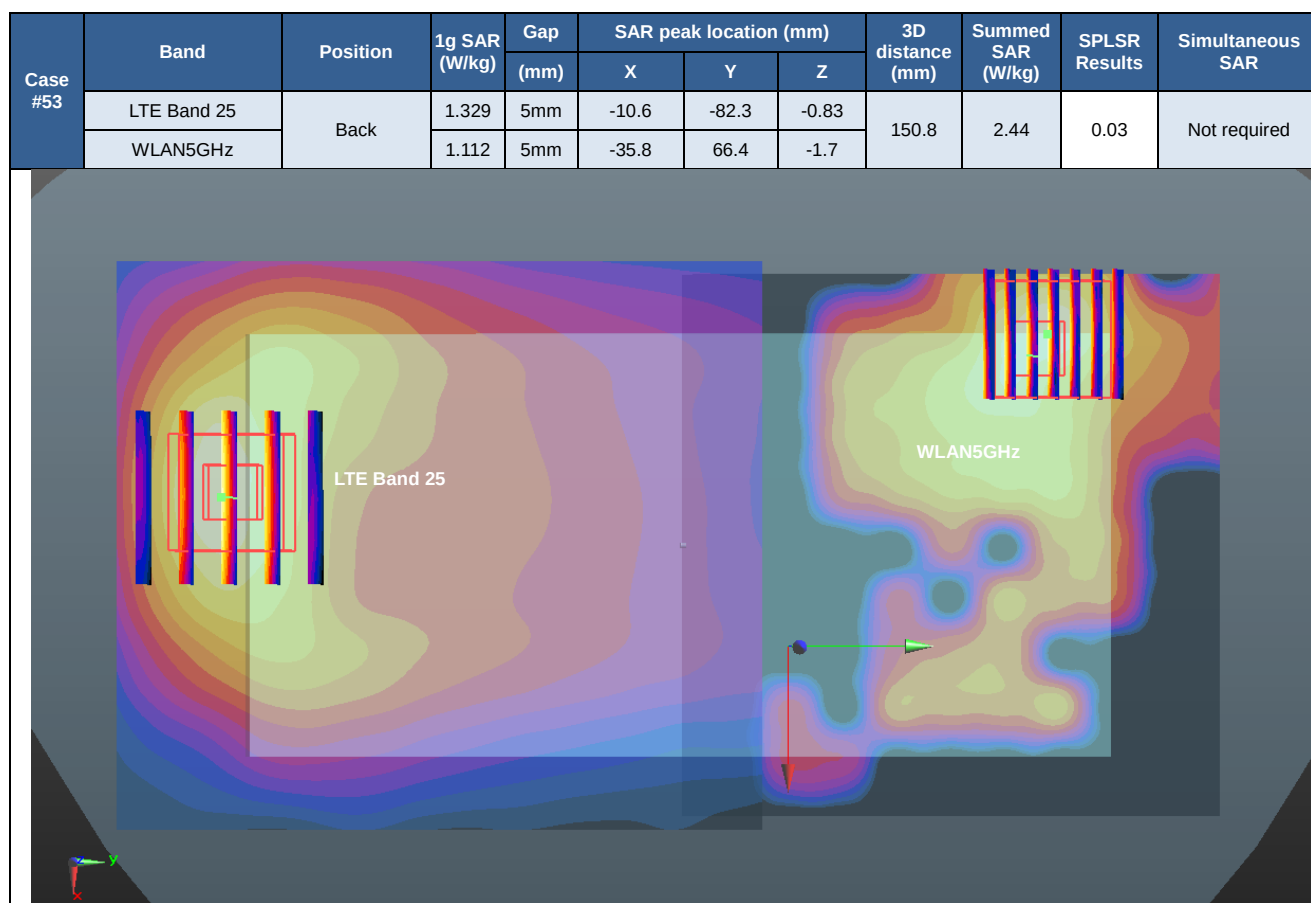


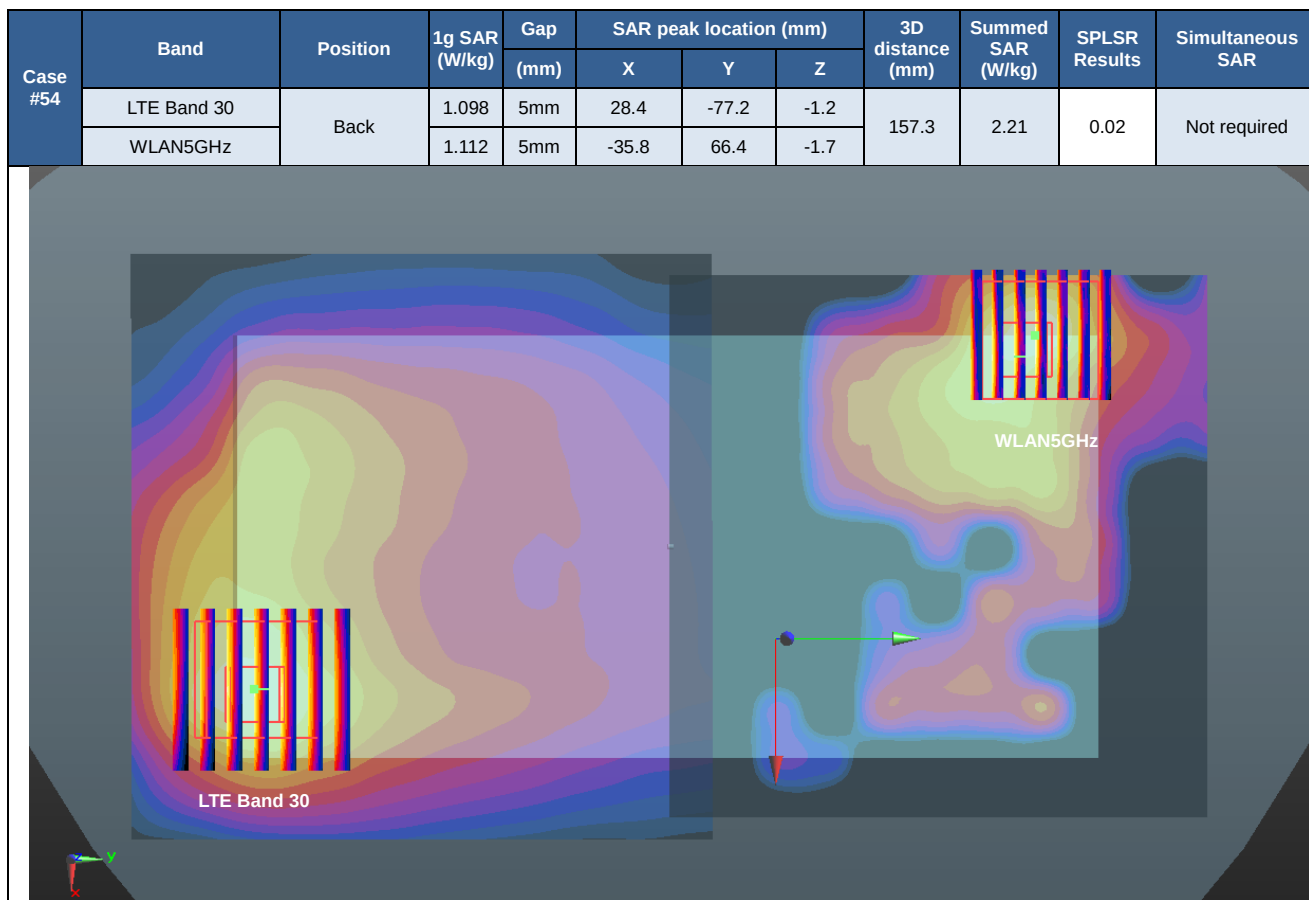




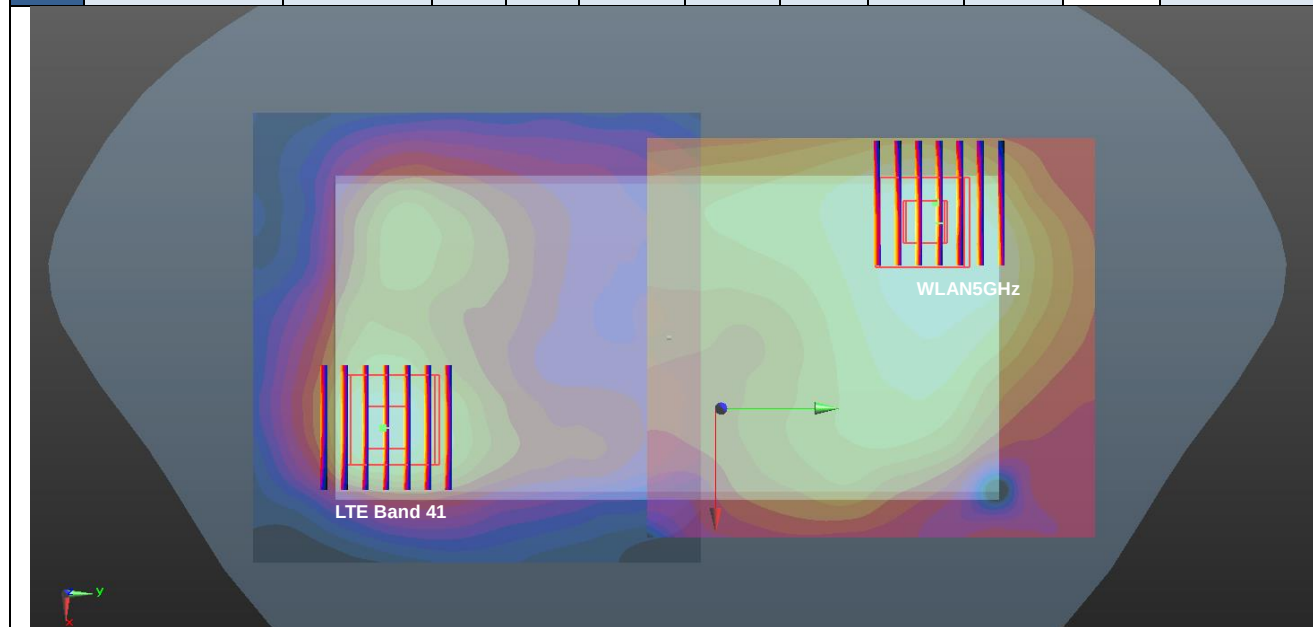




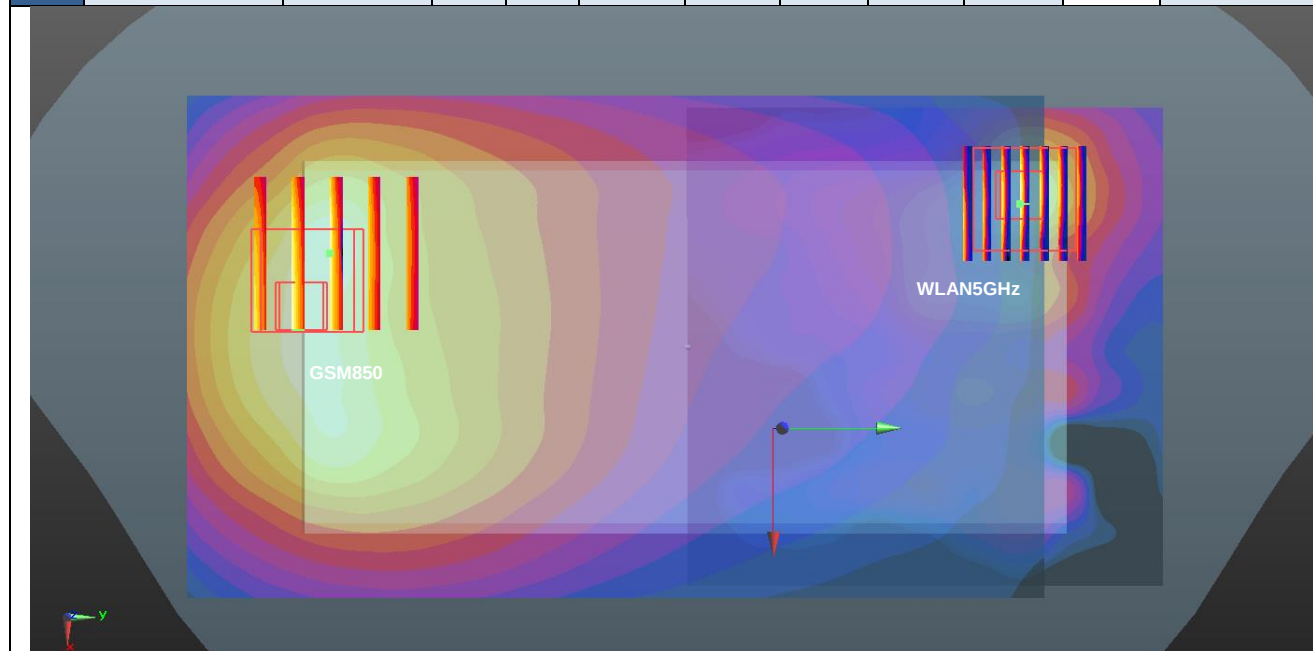




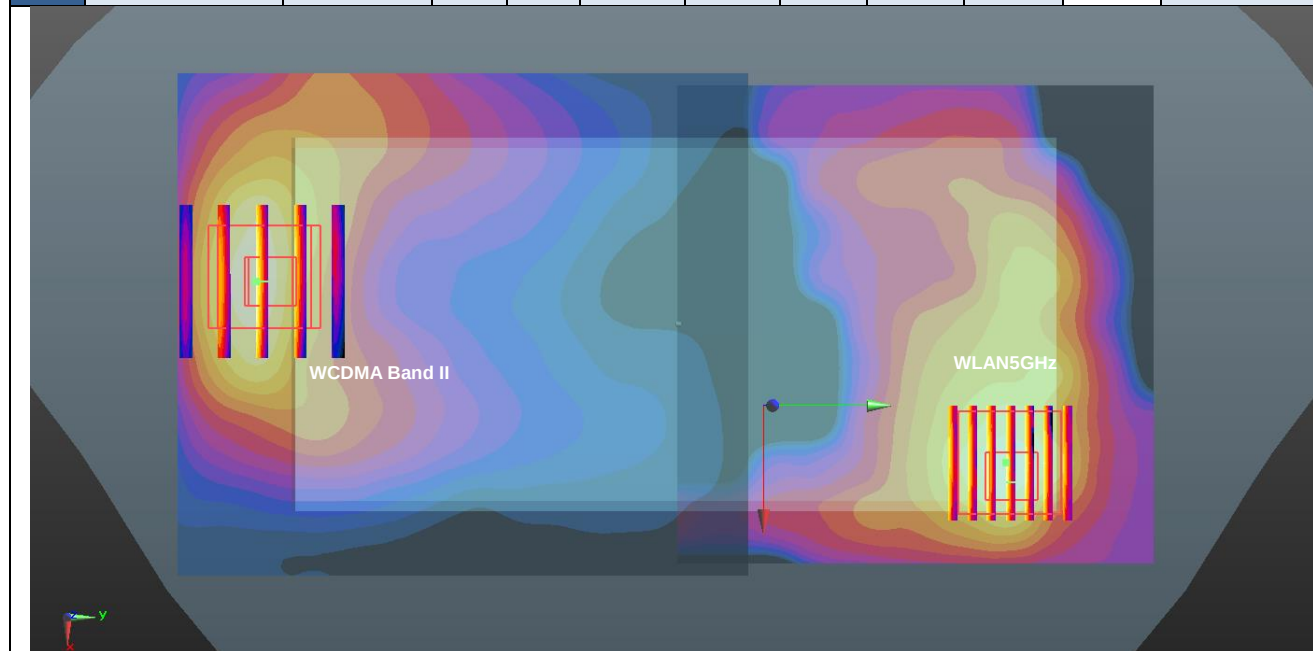
Case #55	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 41	Back	1.398	5mm	23	-70	-0.66	148.5	2.51	0.03	Not required
	WLAN5GHz		1.112	5mm	-35.8	66.4	-1.7				



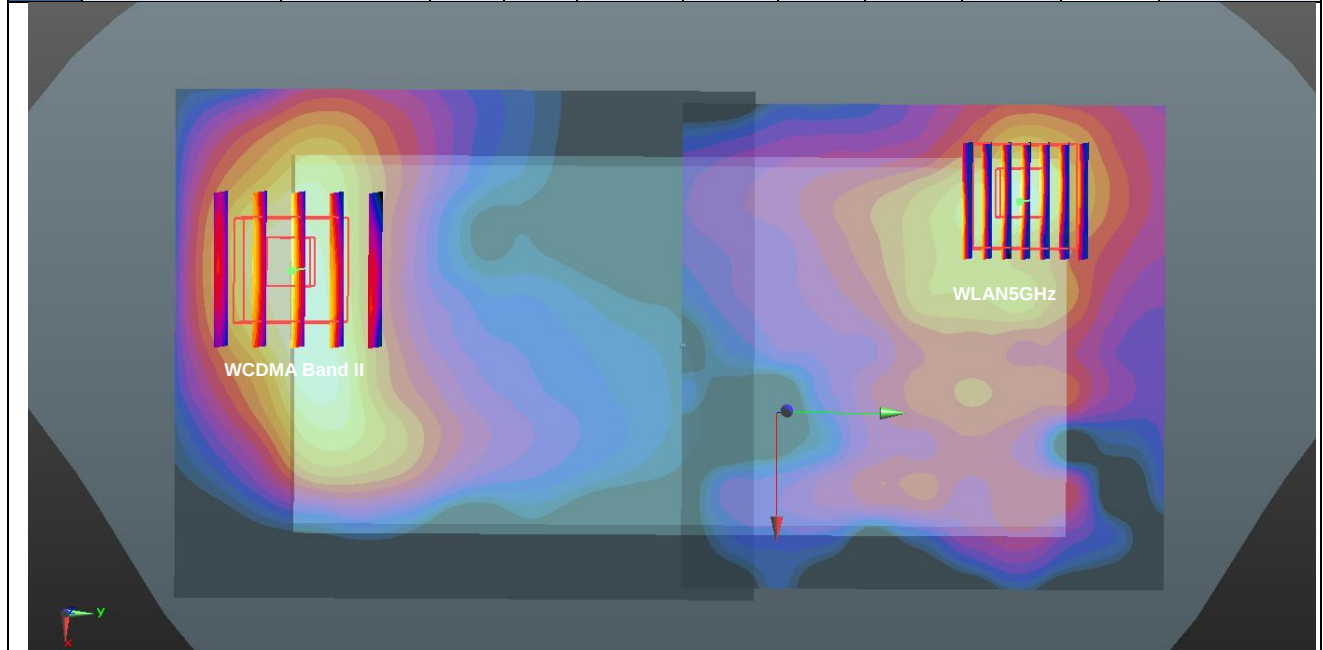
Case #56	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM850	Back	3.029	0mm	-24.3	-76.6	-1.07	147.6	4.01	0.05	Not required
	WLAN5GHz		0.981	0mm	-31.6	70.8	-1.39				



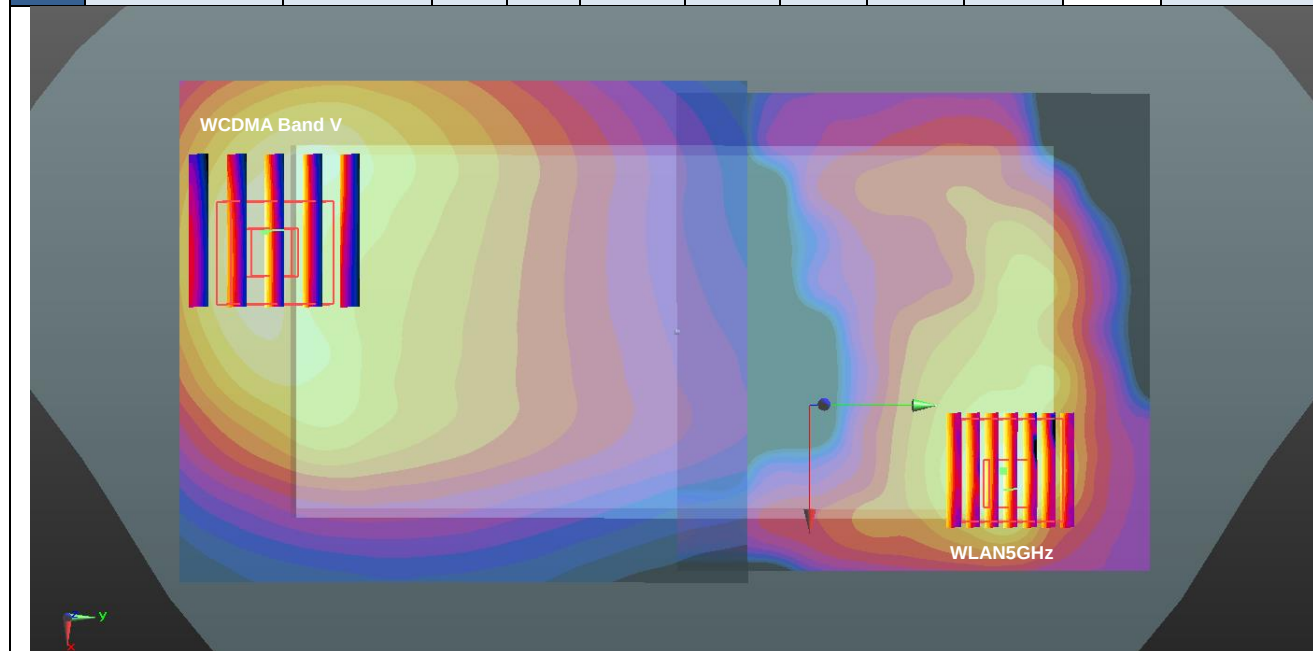
Case #57	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA Band II	Front	2.687	0mm	-7.4	-85.3	-0.54	162.2	4.41	0.06	Not required
	WLAN5GHz		1.726	0mm	34.6	71.4	-1.46				



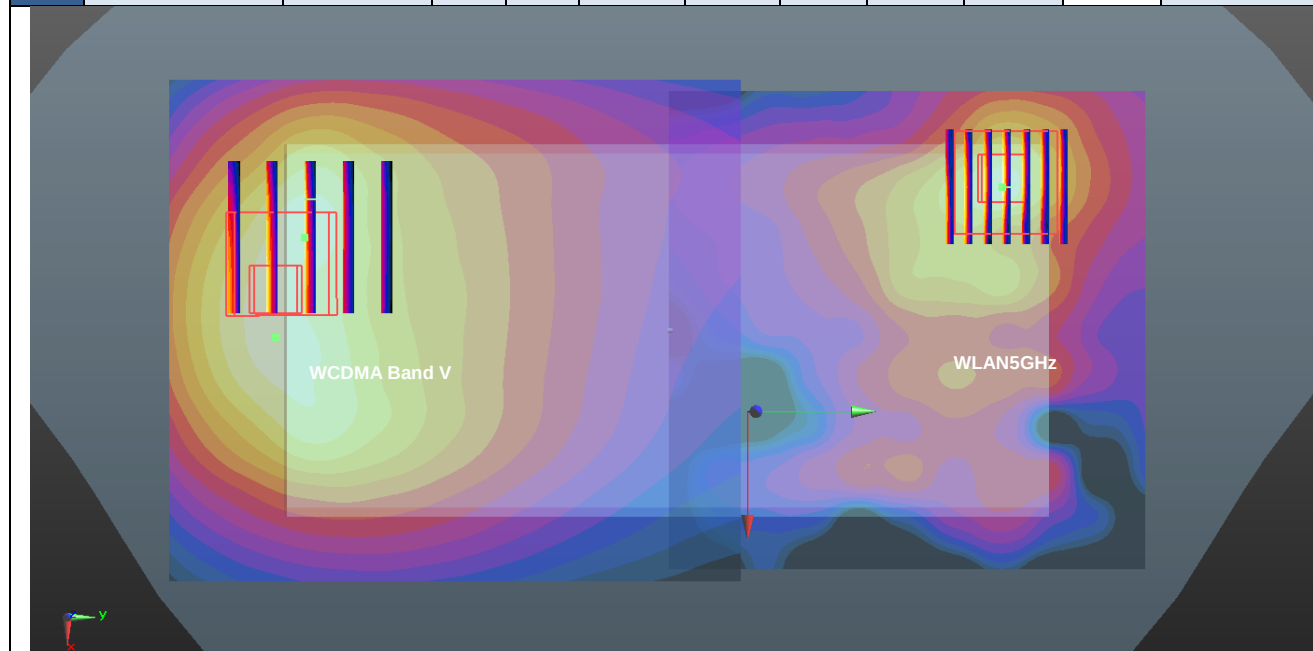
Case #58	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA Band II	Back	3.123	0mm	-15	-81	-0.63	152.7	4.10	0.05	Not required
	WLAN5GHz		0.981	0mm	-31.6	70.8	-1.39				



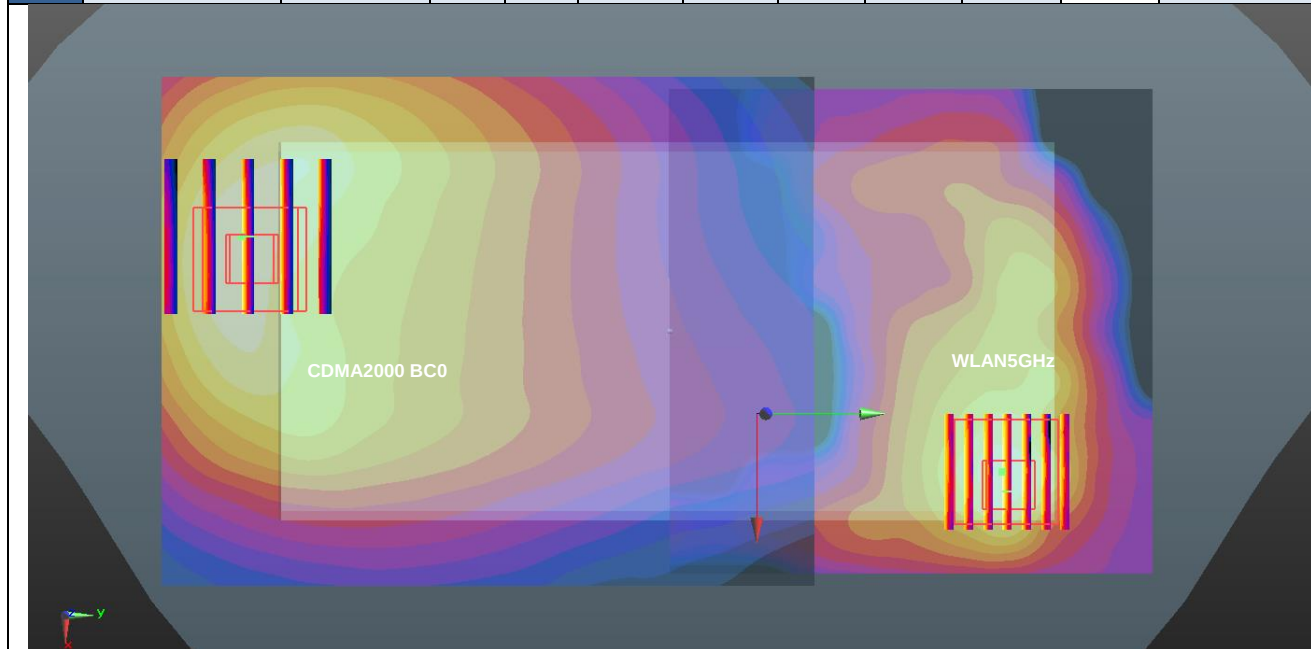
Case #59	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA Band V	Front	2.796	0mm	-19.4	-85.4	-0.87	165.8	4.52	0.06	Not required
	WLAN5GHz		1.726	0mm	34.6	71.4	-1.46				



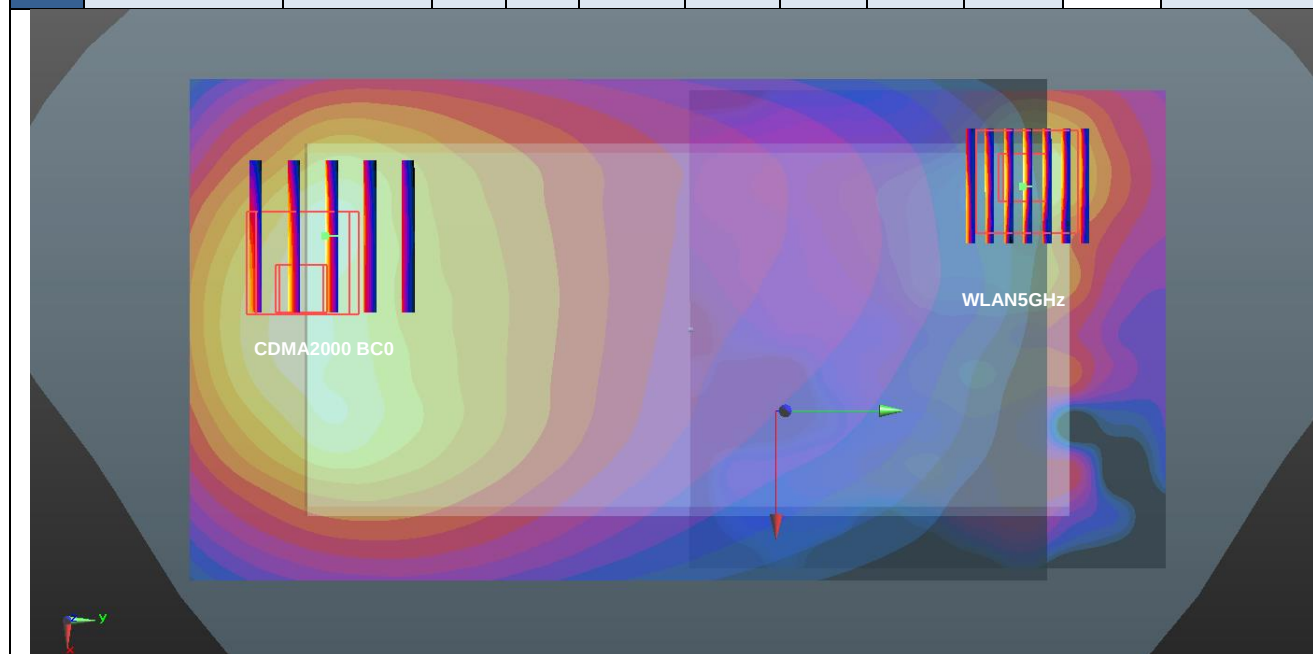
Case #60	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA Band V	Back	3.234	0mm	-25.9	-76.5	-0.93	147.4	4.22	0.06	Not required
	WLAN5GHz		0.981	0mm	-31.6	70.8	-1.39				



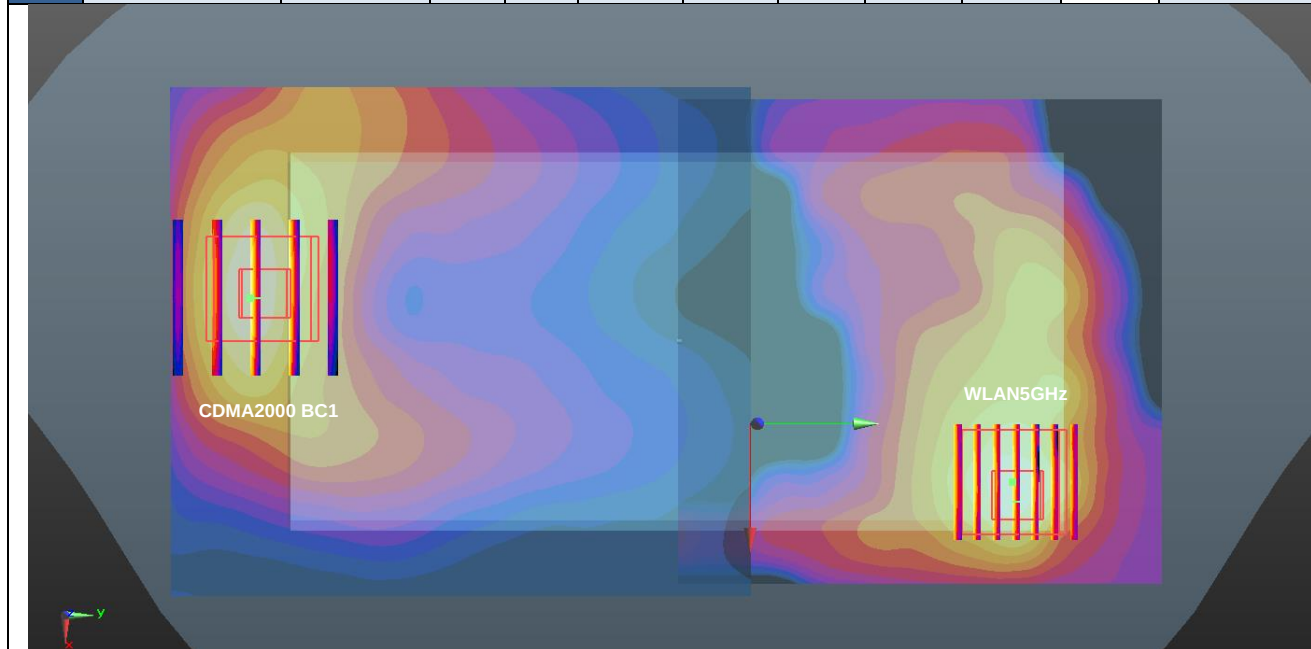
Case #61	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA2000 BC0	Front	2.971	0mm	-14.7	-85.3	-0.87	164.3	4.70	0.06	Not required
	WLAN5GHz		1.726	0mm	34.6	71.4	-1.46				



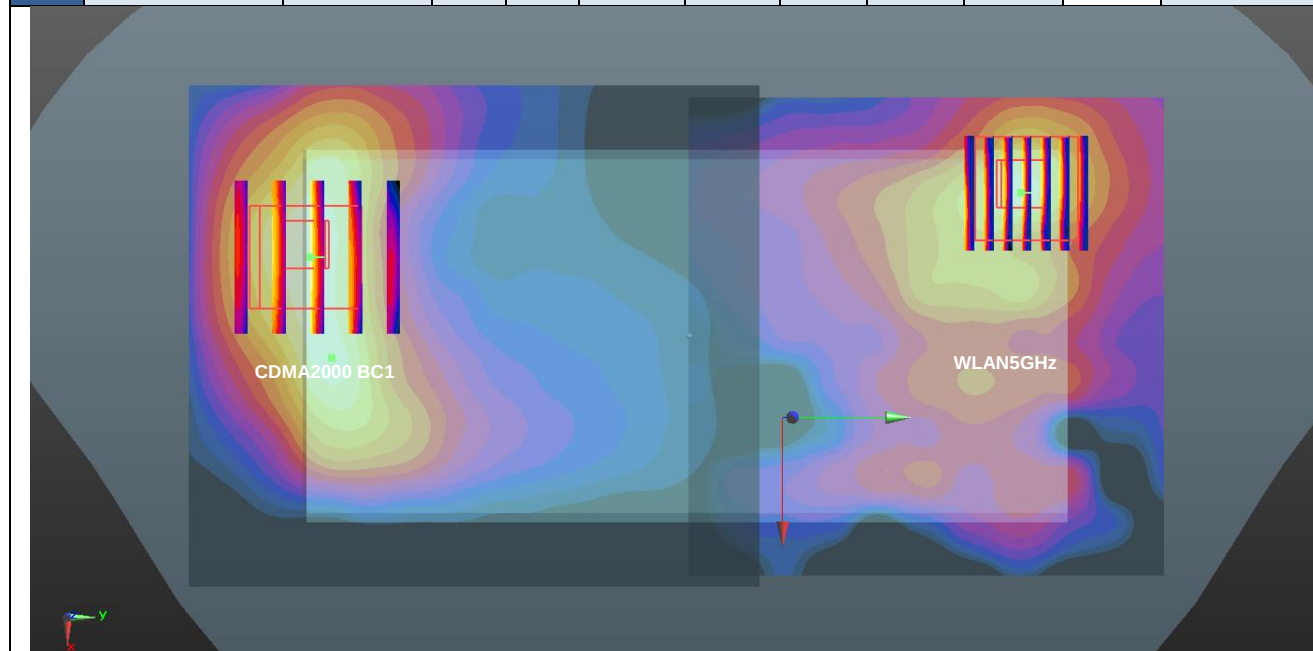
Case #62	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA2000 BC0	Back	3.422	0mm	-24.3	-76.5	-0.86	147.5	4.40	0.06	Not required
	WLAN5GHz		0.981	0mm	-31.6	70.8	-1.39				



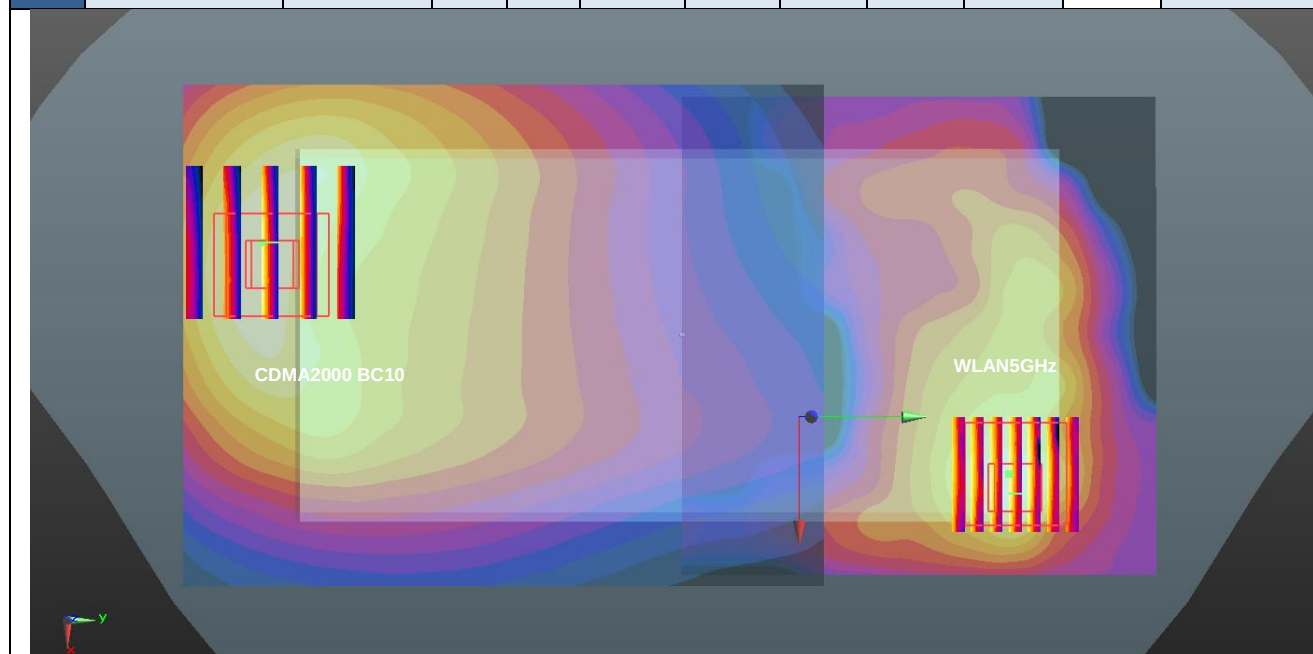
Case #63	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA2000 BC1	Front	2.704	0mm	-9	-83.7	-0.59	161.1	4.43	0.06	Not required
	WLAN5GHz		1.726	0mm	34.6	71.4	-1.46				



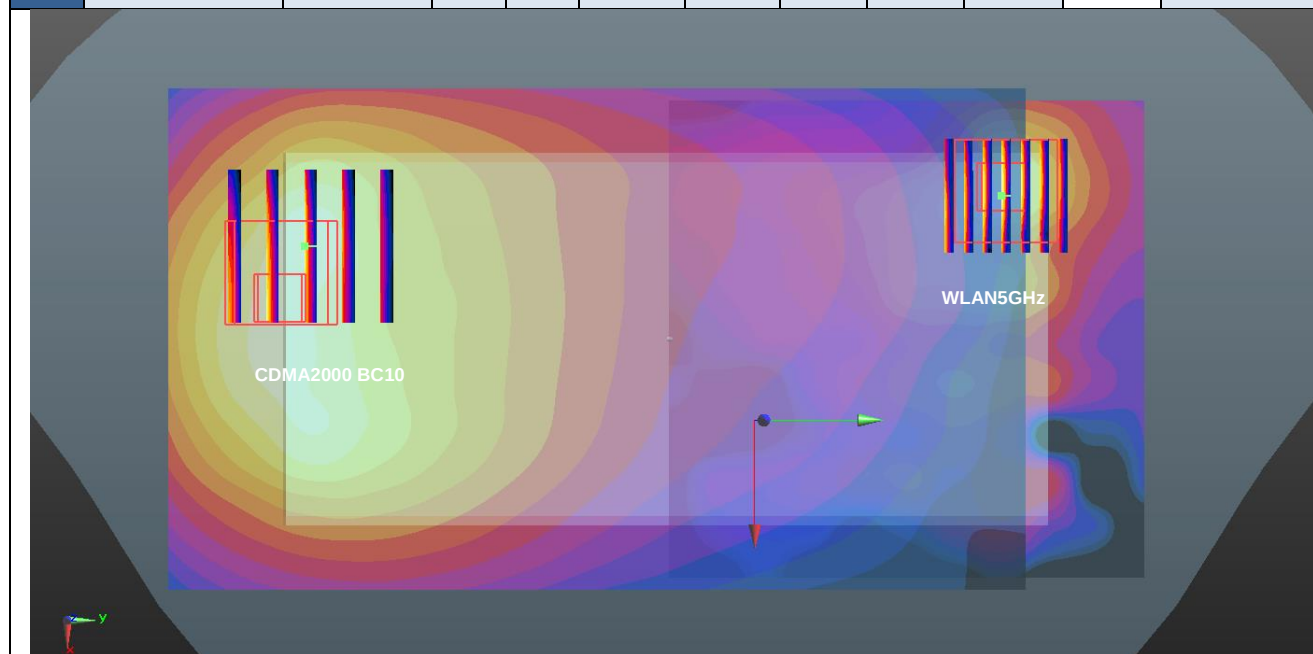
Case #64	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA2000 BC1	Back	3.291	0mm	-16.5	-81.1	-0.66	152.7	4.27	0.06	Not required
	WLAN5GHz		0.981	0mm	-31.6	70.8	-1.39				



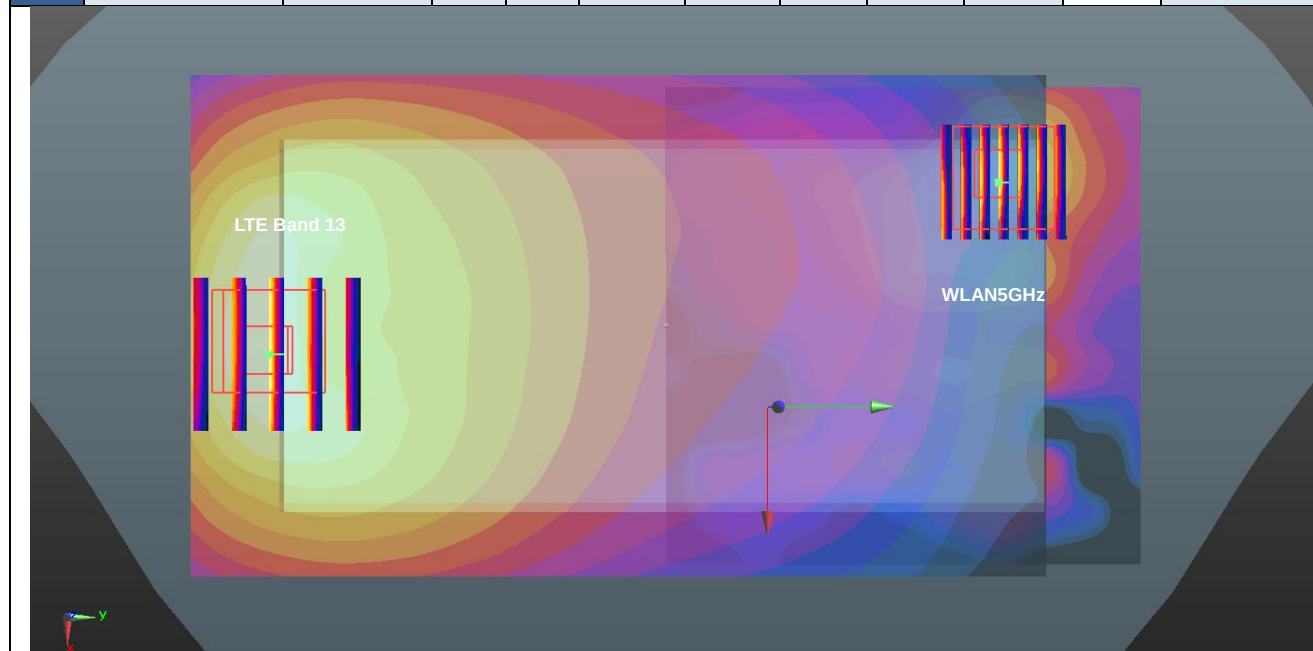
Case #65	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA2000 BC10	Front	2.784	0mm	-13.1	-85.3	-0.88	163.8	4.51	0.06	Not required
	WLAN5GHz		1.726	0mm	34.6	71.4	-1.46				



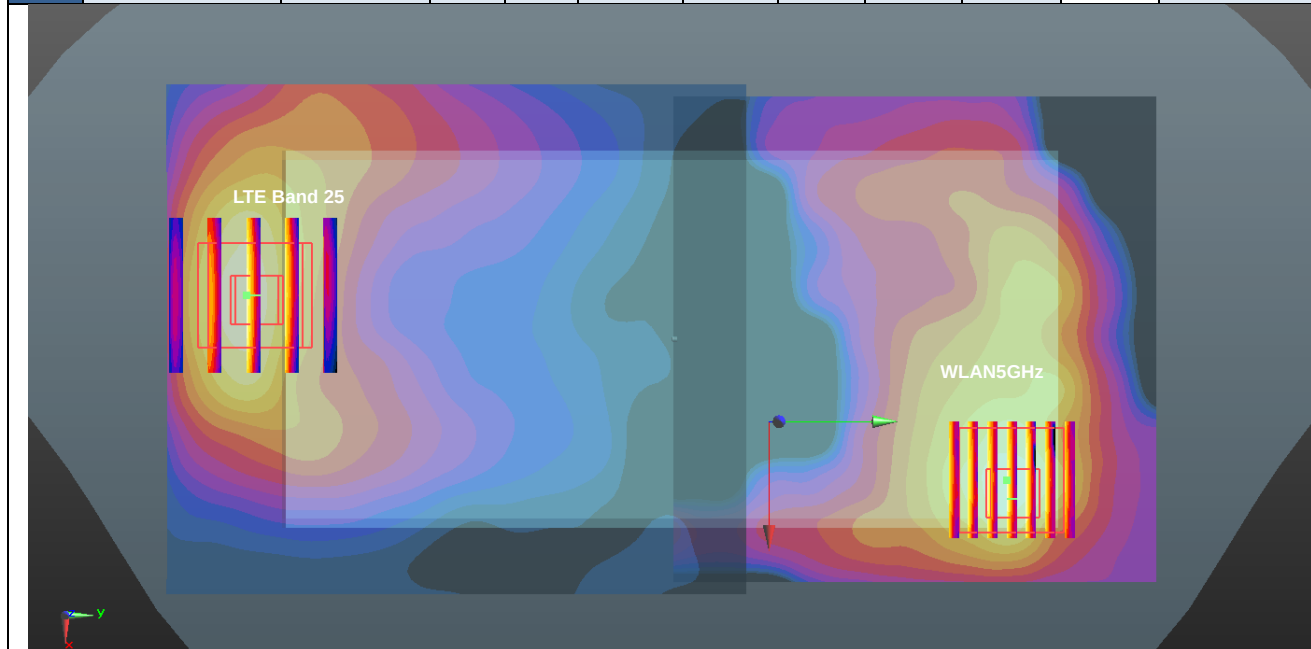
Case #66	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA2000 BC10	Back	3.236	0mm	-24.3	-76.5	-0.09	147.5	4.22	0.06	Not required
	WLAN5GHz		0.981	0mm	-31.6	70.8	-1.39				



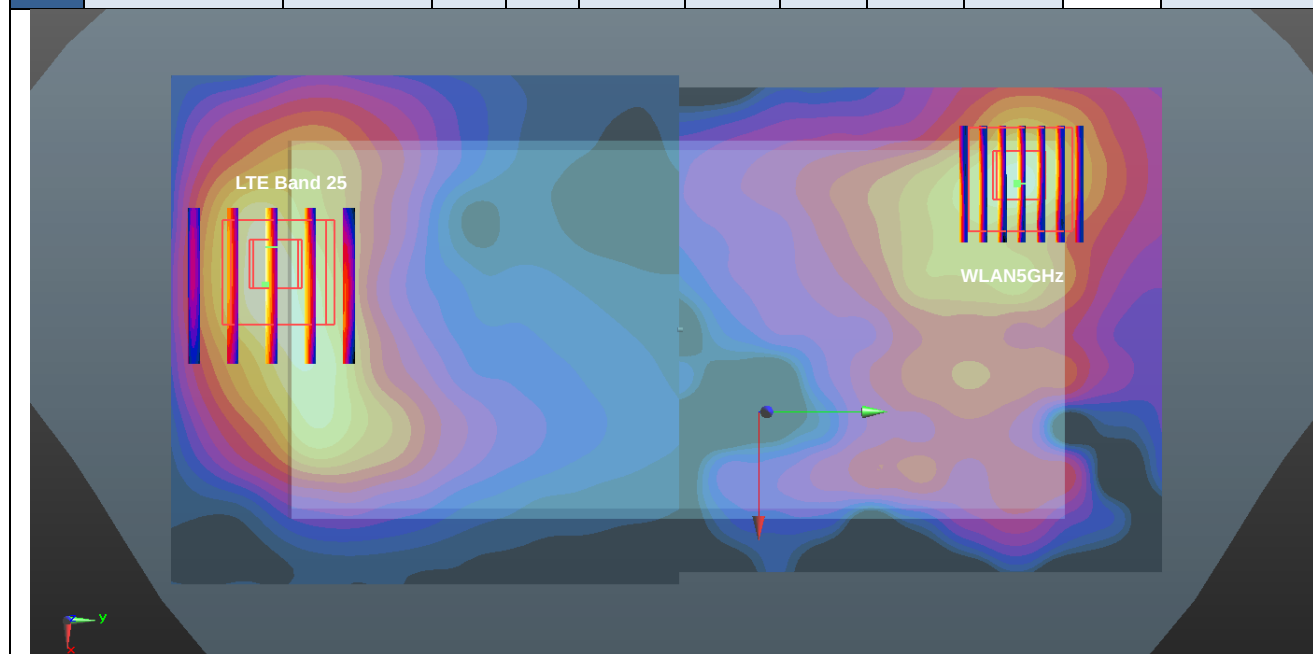
Case #67	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 13	Back	3.075	0mm	6	-83.5	-1.28	158.8	4.06	0.05	Not required
	WLAN5GHz		0.981	0mm	-31.6	70.8	-1.39				

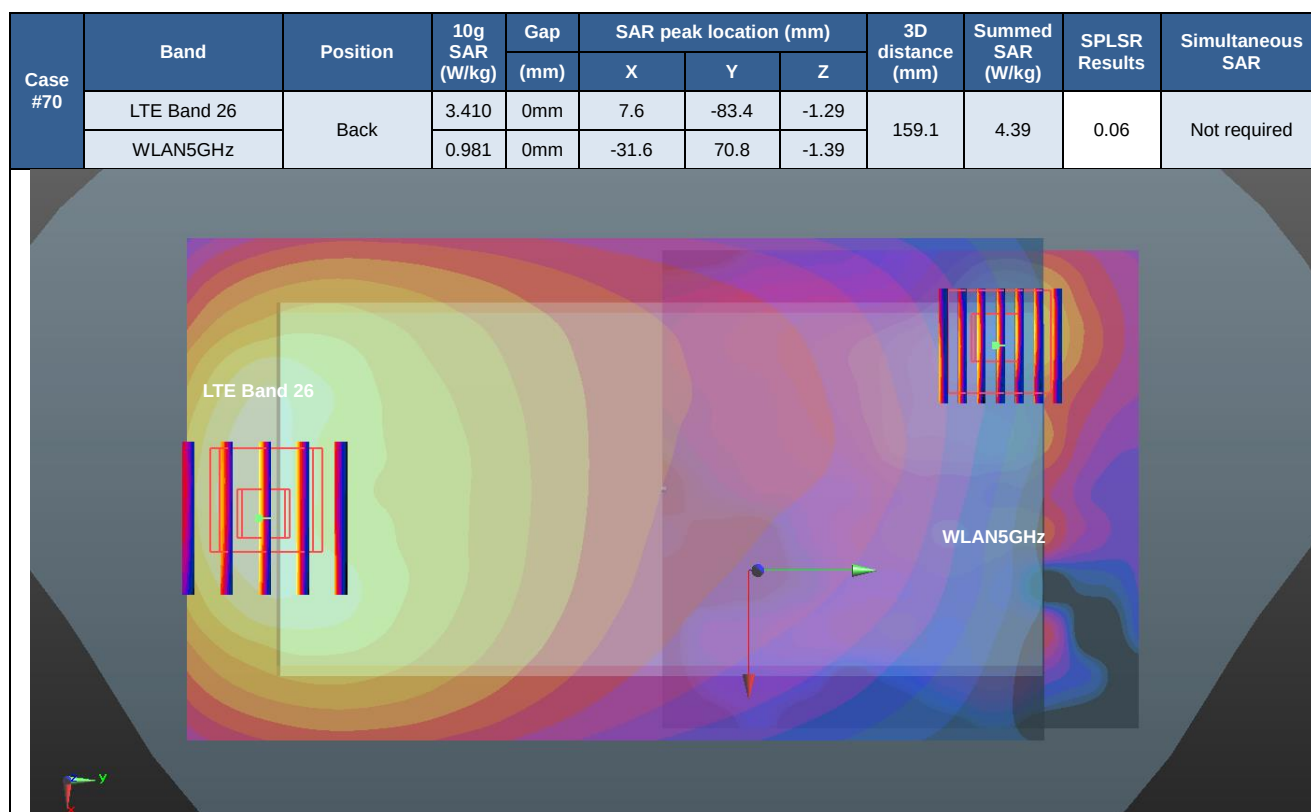


Case #68	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 25	Front	2.697	0mm	-7.4	-85.3	-0.53	162.2	4.42	0.06	Not required
	WLAN5GHz		1.726	0mm	34.6	71.4	-1.46				

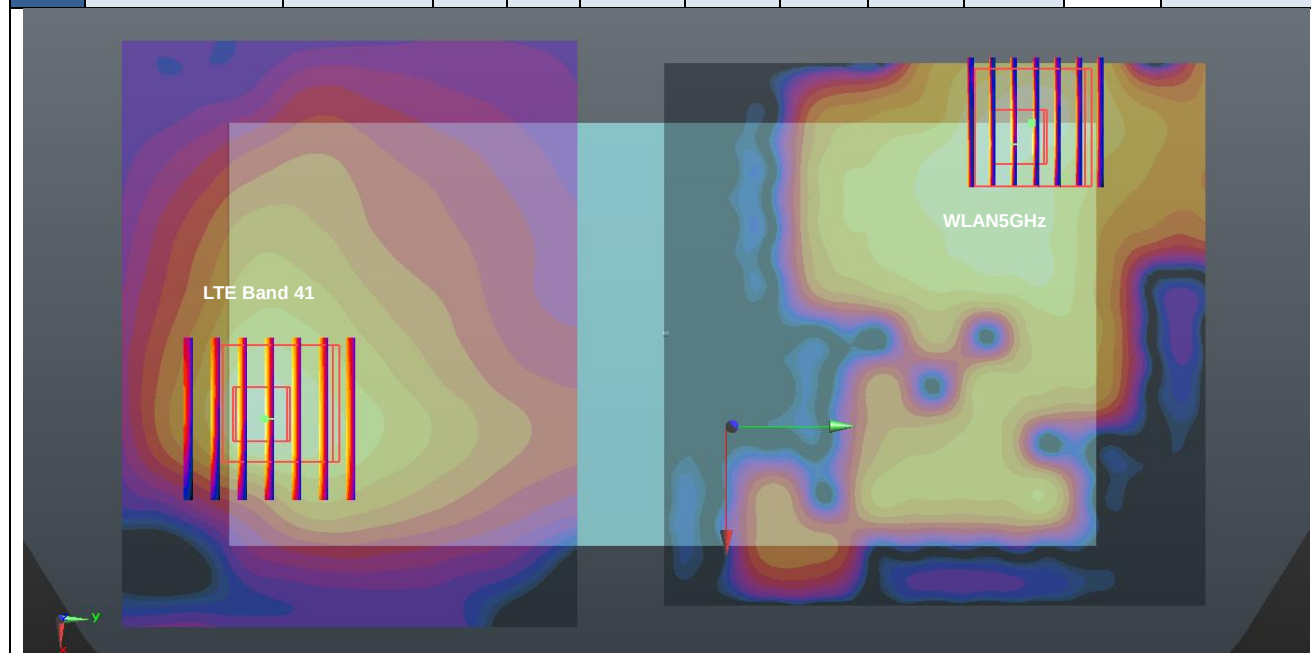


Case #69	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 25	Back	3.142	0mm	-15.4	-83.9	-0.6	155.5	4.12	0.05	Not required
	WLAN5GHz		0.981	0mm	-31.6	70.8	-1.39				

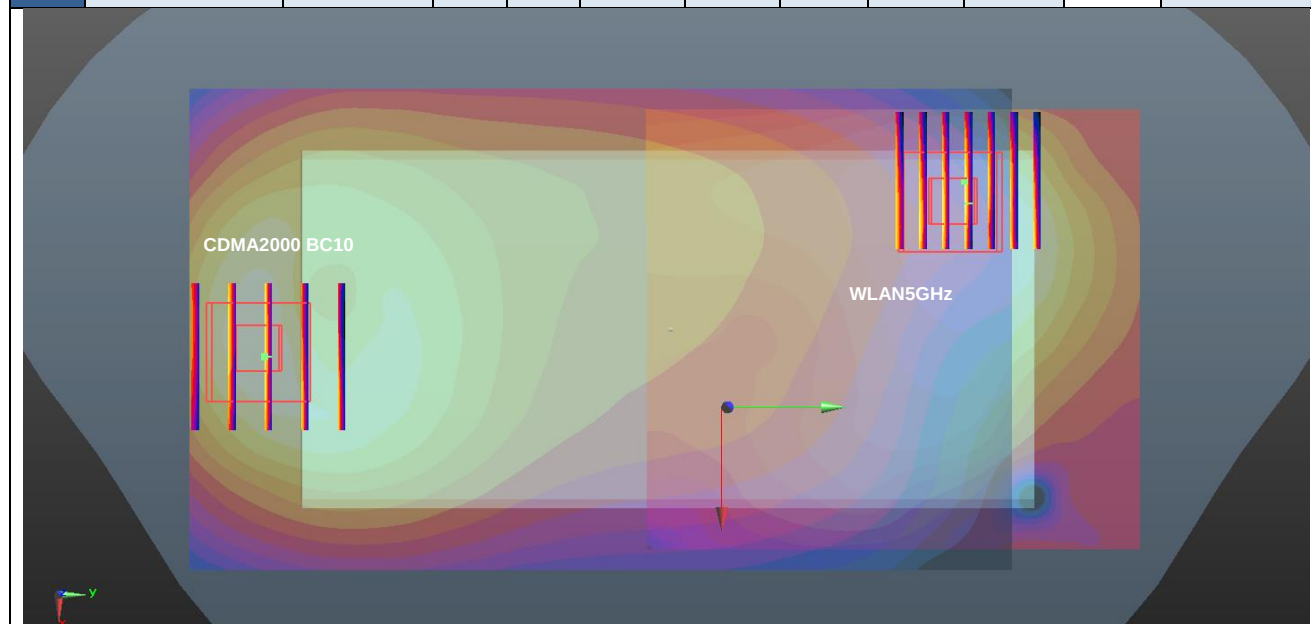




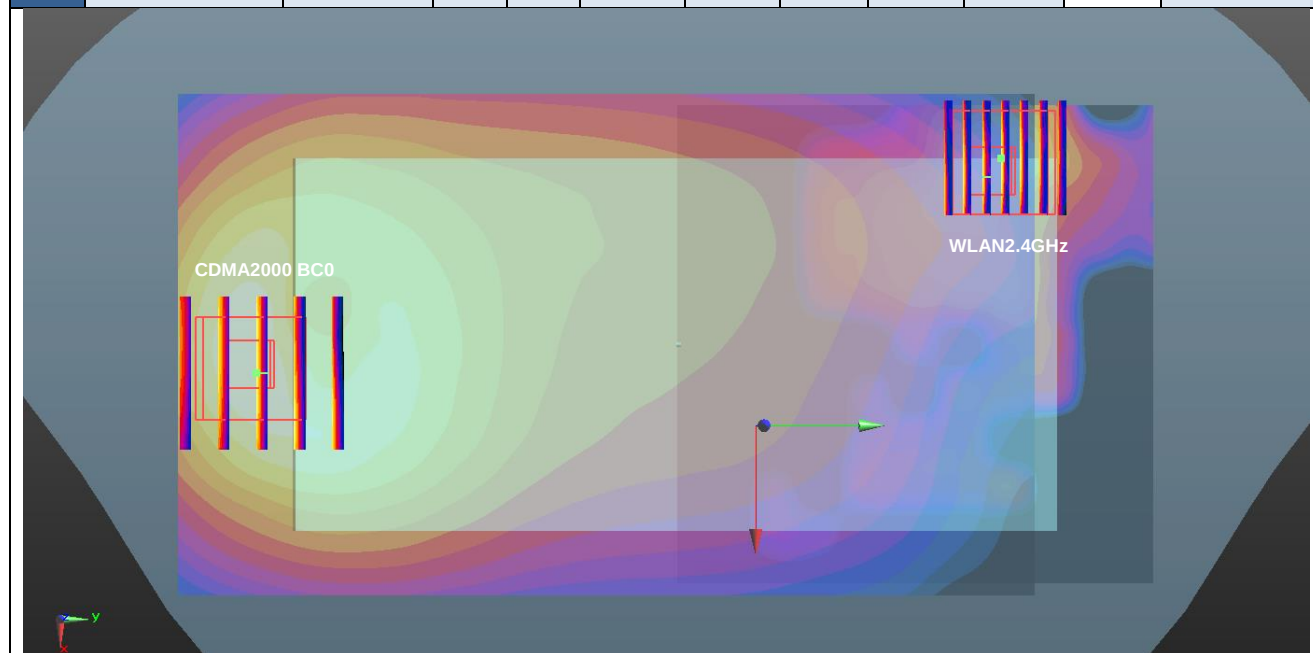
Case #71	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 41	Back	3.384	0mm	21.4	-68.8	-0.74	149.3	4.37	0.06	Not required
	WLAN5GHz		0.981	0mm	-31.6	70.8	-1.39				



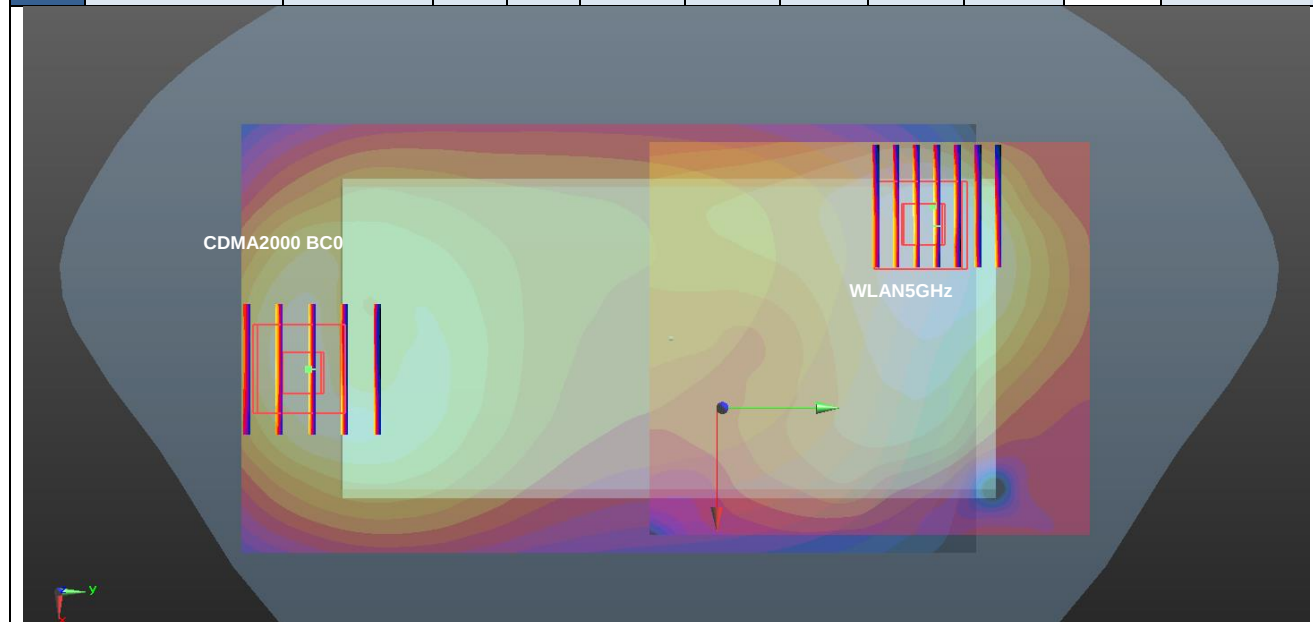
Case #72	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA2000 BC10	Back	1.127	5mm	6	-88.5	-1.46	160.4	2.24	0.02	Not required
	WLAN5GHz		1.112	5mm	-35.8	66.4	-1.7				



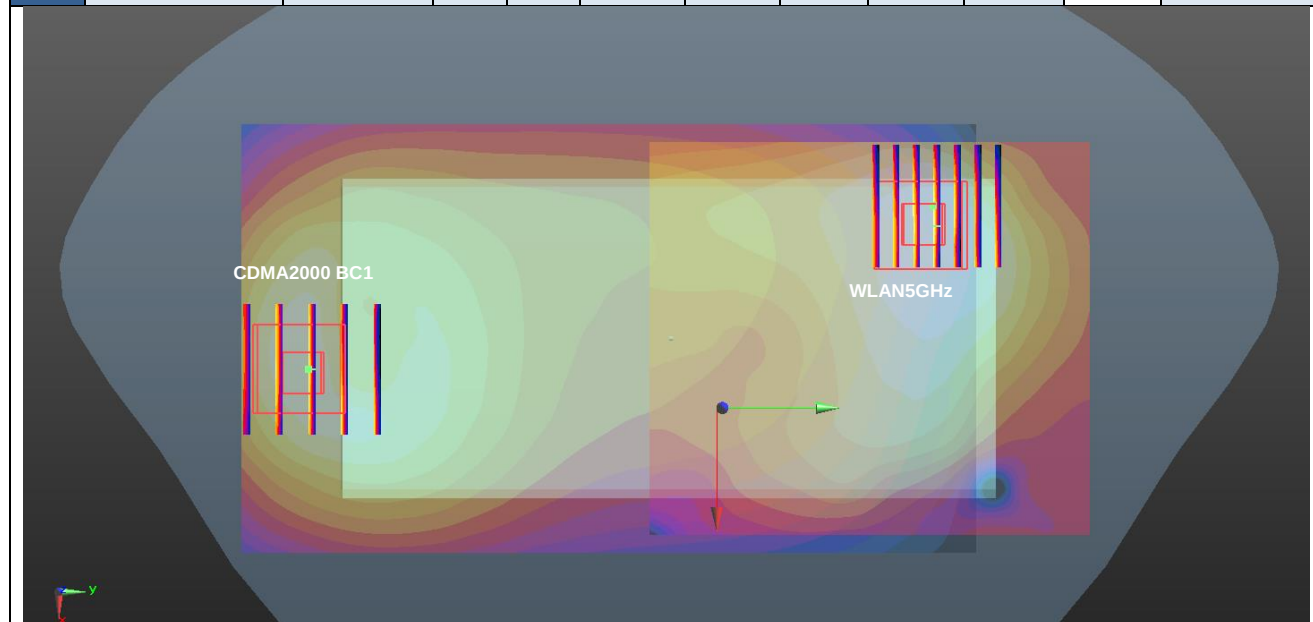
Case #73	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA2000 BC0	Back	1.198	5mm	7.5	-90.1	-1.49	159.0	1.92	0.02	Not required
	WLAN2.4GHz		0.726	5mm	-29.4	64.6	-1.63				



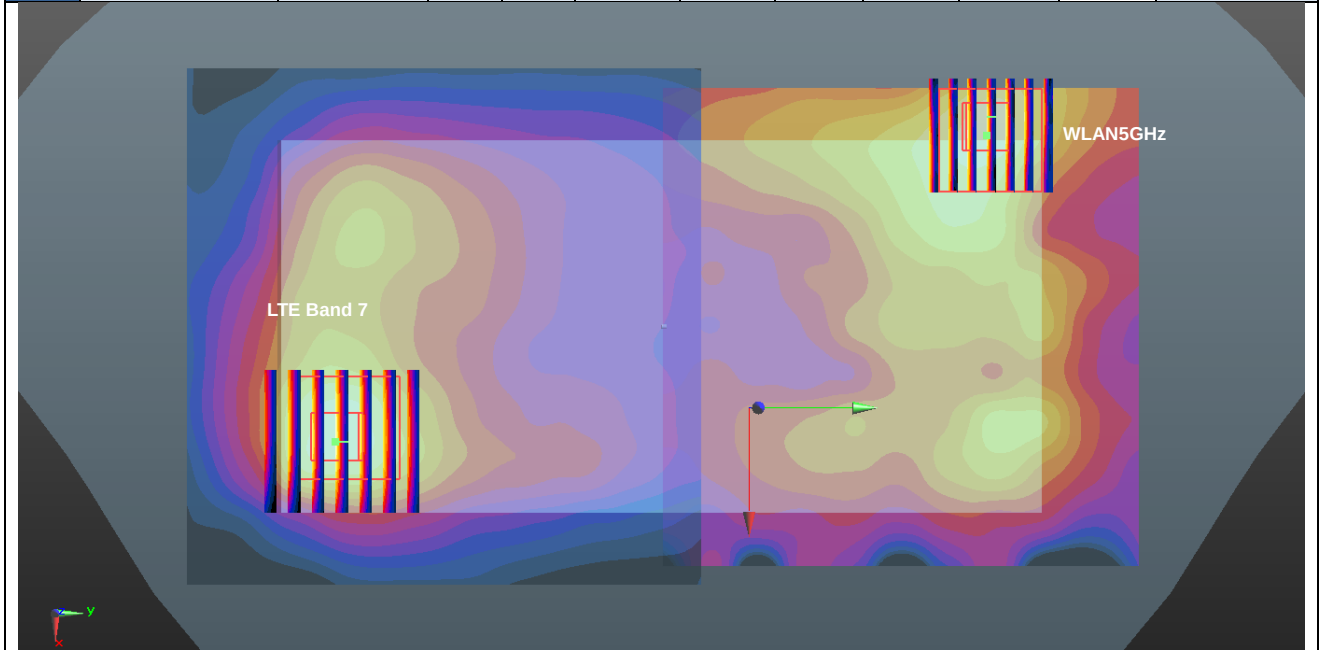
Case #74	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA2000 BC0	Back	1.198	5mm	7.5	-90.1	-1.49	162.4	2.31	0.02	Not required
	WLAN5GHz		1.112	5mm	-35.8	66.4	-1.7				



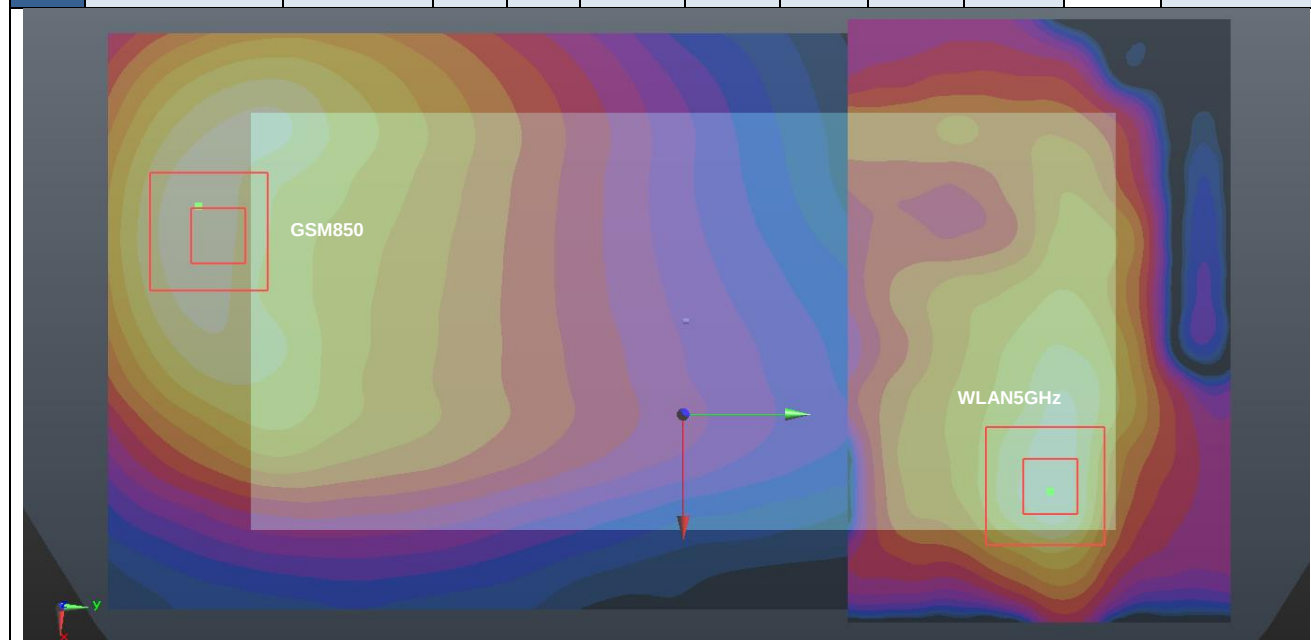
Case #75	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA2000 BC1	Back	1.361	5mm	7.5	-90.1	-1.49	162.4	2.47	0.02	Not required
	WLAN5GHz		1.112	5mm	-35.8	66.4	-1.7				



Case #76	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 7	Back	1.291	5mm	-23	-69.8	-0.66	139.2	2.40	0.03	Not required
	WLAN5GHz		1.112	5mm	-42.4	68	-0.88				



Case #77	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM850	Front	2.469	0mm	-5	-82.1	-0.8	155.7	4.20	0.06	Not required
	WLAN 5GHz		1.726	0mm	31	69.4	-2.44				



Case #78	Band	Position	10g SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	WCDAM Band IV	Front	2.598	0mm	0	-81	-1.14	153.6	4.32	0.06	Not required
	WLAN 5GHz		1.726	0mm	31	69.4	-2.44				

